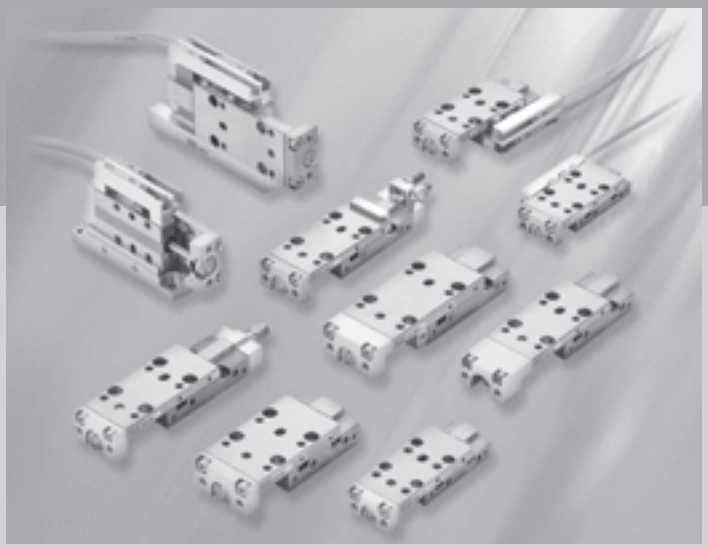
LCM

Linear slide cylinder

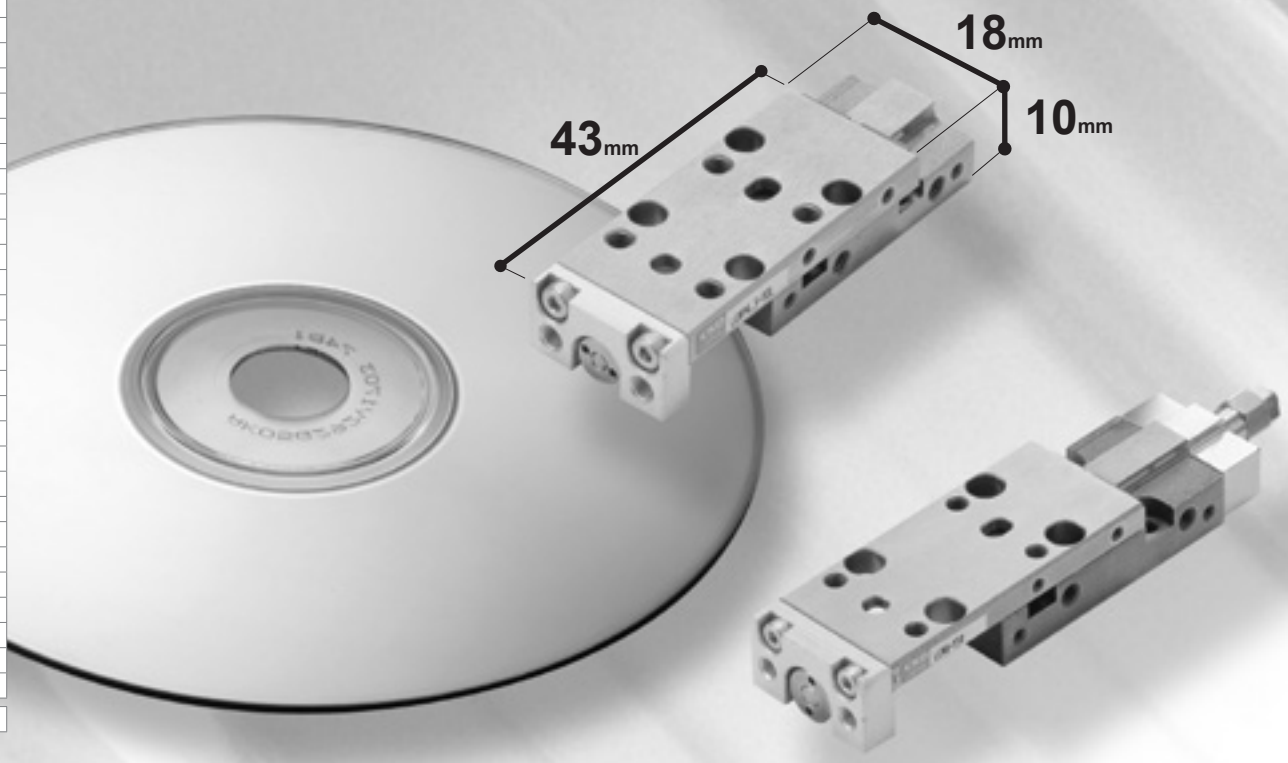
ø4.5/ø6/ø8



CONTENTS

Compact/high-precision actuator.

Ultra-compact, high-precision, rigid linear slide cylinder LCM Series. (ø4.5/ø6/ø8)



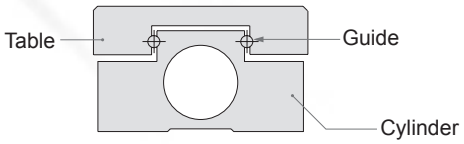
High-precision positioning

High precision 0.005 mm* parallelism during movement and 0.03 mm parallelism of installation. Ideal for positioning.

* 0.006 mm in some models. Refer to page 49 for details.

Ultra-compact body

The cylinder body, linear guide and slide table are all integrated into an extremely small body.



Linear Slide Cylinder **LCM Series**

Fits in a narrow, small space

The compact body can fit in a narrow, small space allowing for more flexible layout.

A workpiece can be mounted on two sides.

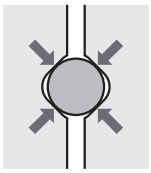
A workpiece can be directly mounted on the top and side with the preprocessed mounting holes.

Reliable stainless steel body

The cylinder body and slide table are corrosion-resistant stainless steel.

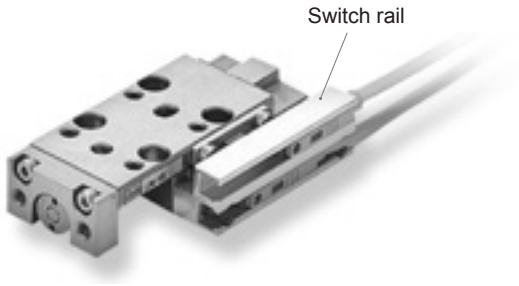
Resistant to load

Uses linear guide with contact at four points. Withstands load from all directions.



Compatible with 2-color LED switch

The 2-color LED switch newly added to the ultra-compact F-switches is available.

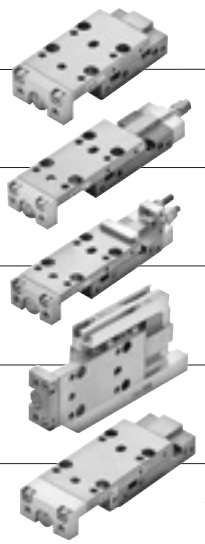


Wide range of choices

The stroke adjustable, side mounting and clean-room specifications are available.

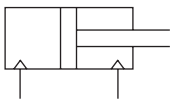
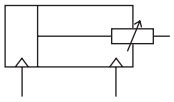
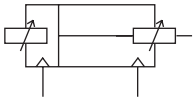
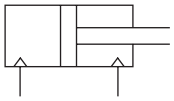
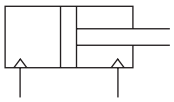
LCM Series variation

Model variations	Bore size	Stroke (mm)
Double acting/single rod — LCM	ø4.5, ø6, ø8	5, 10, 15, 20, 30
Double acting/stroke adjustable (Push) — LCM-P	ø4.5, ø6, ø8	5, 10, 15, 20, 30
Double acting/stroke adjustable (push/pull) — LCM-R	ø4.5, ø6, ø8	5, 10, 15, 20, 30
Double acting/side mounting — LCM-A	ø4.5, ø6, ø8	5, 10, 15, 20, 30
Double acting/single rod clean-room specifications — LCM-P73	ø4.5, ø6, ø8	5, 10, 15, 20, 30



Series variation

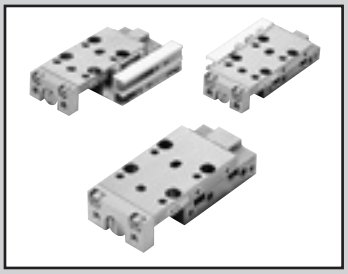
Linear slide cylinder LCM Series

Variation	Model No. JIS symbol	Bore size (mm)	
Double acting/single rod	LCM 	ø4.5	
		ø6	
		ø8	
Double acting/stroke adjustable (Push)	LCM-P 	ø4.5	
		ø6	
		ø8	
Double acting/stroke adjustable (push/pull)	LCM-R 	ø4.5	
		ø6	
		ø8	
Double acting/side mounting	LCM-A 	ø4.5	
		ø6	
		ø8	
Double acting/single rod clean-room specifications	LCM-P73 	ø4.5	
		ø6	
		ø8	

●: Standard, ◎: Option, ○: Made to order, ■: Not available

	Standard stroke (mm)					Option				Switch	Page
						With buffer	With magnet	With magnet + switch rail	With positioning pin		
	5	10	15	20	30	B	M	F	J*		
	●	●				◎	◎	◎	◎	◎	10
	●	●	●	●	●						
	●	●	●	●	●						
	●	●				◎	◎	◎	◎	◎	18
	●	●	●	●	●						
	●	●	●	●	●						
	●	●				◎	◎	◎	◎	◎	24
	●	●	●	●	●						
	●	●	●	●	●						
	●	●				◎	◎	◎	◎	◎	30
	●	●	●	●	●						
	●	●	●	●	●						
	●	●				■	◎	◎	◎	◎	40
	●	●	●	●	●						
	●	●	●	●	●						

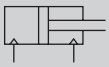
Note : Custom stroke is not available.



Linear slide cylinder Double acting/single rod

LCM Series

● Bore size: ø4.5, ø6, ø8

JIS symbol 

RoHS CAD

Specifications

Descriptions		LCM		
Bore size	mm	ø4.5	ø6	ø8
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.2		0.15
Proof pressure	MPa	1.05		
Ambient temperature	°C	0 to 60		
Port size		M3		
Stroke tolerance	mm	+1.0 0		
Working piston speed	mm/s	30 to 500		
Cushion		No	With rubber cushion	
Lubrication		Not required (use turbine oil class 1 ISO VG32 if lubrication is necessary)		
Allowable absorbed energy	J	Refer to the table on page 50.		

With buffer specifications

Descriptions			LCM-*-*-*-B
Buffer stroke		mm	4 (MAX)
Buffer part spring load	When set	N	0.3
	Operating	N	0.7

Stroke

Bore size (mm)	Standard stroke (mm)	With switch, min. Stroke (mm)
ø4.5	5/10	5
ø6	5/10/15/20/30	
ø8	5/10/15/20/30	

*1: Products with stroke other than standard stroke are not available.

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/F3YV
Applications	Dedicated for programmable controller	For programmable controller, relay	Dedicated for programmable controller		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20mA	50 mA or less	5 to 20 mA (*3)		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 µA or less	1 mA or less		10 µA or less		
Weight g	1 m: 10 3 m: 29						

*1: Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2: Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3: The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4: The F-switch uses a bend-resistant lead wire.

Cylinder weight

Unit: g

Stroke(mm)	5		10		15		20		30		Additional weight	
Bore size(mm)	Magnet + No switch rail	Magnet + With switch rail	Magnet + No switch rail	Magnet + With switch rail	Magnet + No switch rail	Magnet + With switch rail	Magnet + No switch rail	Magnet + With switch rail	Magnet + No switch rail	Magnet + With switch rail	With buffer	With 1 switch Additional weight per
ø4.5	42	46	42	46	-	-	-	-	-	-	3	Refer to the weight in the switch specifications.
ø6	58	63	58	63	66	72	74	80	90	97	4	
ø8	83	88	83	88	104	110	104	110	125	132	5	

Theoretical thrust table

Unit: N

Bore size(mm)	Operating direction	Working pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	Push	3.2	4.8	6.4	8.0	9.5	11.1
	Pull	2.6	3.8	5.1	6.4	7.7	8.9
ø6	Push	5.7	8.5	11.3	14.1	17.0	19.8
	Pull	4.2	6.4	8.5	10.6	12.7	14.8
ø8	Push	10.1	15.1	20.1	25.1	30.2	35.2
	Pull	8.6	13.0	17.3	21.6	25.9	30.2

How to order

● Without switch (without magnet for switch)

LCM - 6 - 10 - R ——— J2

● With switch (built-in magnet for switch)

LCM - 6 - 10 - R - F2H - R - J2

Ⓐ Bore size
Ⓑ Stroke
Ⓒ Piping direction
Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓕ Option

Code	Description
Ⓐ Bore size (mm)	
4.5	ø4.5
6	ø6
8	ø8

Ⓑ Stroke (mm)

		Bore size		
		ø4.5	ø6	ø8
5	5	●	●	●
10	10	●	●	●
15	15	-	●	●
20	20	-	●	●
30	30	-	●	●

Ⓒ Piping direction

R	Right from rod side
L	Left from rod side

Ⓓ Switch model No.

Straight lead wire	L-shaped lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
-	**F2S***	Proximity		●	1-color LED	2-wire
F2H*	**F2V***			●		
-	**F3S***			●		3-wire
F3H*	**F3V***			●		
F3PH*	**F3PV***			●	1-color LED (PNP output) (made to order)	3-wire
F2YH*	**F2YV***			●	2-color LED	2-wire
F3YH*	**F3YV***			●		3-wire

*** Lead wire length**

Blank	1 m (standard)
3	3 m (option)

Ⓔ Switch quantity

R	1 on rod side
H	1 on head side
D	2

Ⓕ Option

B	With buffer
M *1	With magnet
F1 *1, 2	With magnet + switch rail (one switch groove)
F2 *1	With magnet + switch rail (two switch grooves)
J*	With positioning pin (*···· number of pins)

⚠ Precautions for model No. selection

*1: Can be omitted if the switch model No. is specified.
*2: Available only for ø4.5.

[Example of model No.]

LCM-6-10-R-F2H-R-J2

Model No.: Linear slide cylinder, double acting
Ⓐ Bore size : ø6 mm
Ⓑ Stroke : 10 mm
Ⓒ Piping direction : Right when viewed from rod side
Ⓓ Switch model No. : Proximity switch F2H, lead wire 1 m
Ⓔ Switch quantity : 1 on rod side
Ⓕ Option : With positioning pin (2)

How to order switch

● Switch body + switch rail + magnet

LCM - F2H - R - 6 - 10

Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓐ Bore size
Ⓑ Stroke

● Switch body only

SW - F2H

Ⓓ Switch model No.

● Magnet only

LCM - M - 6

Magnet
Ⓐ Bore size

● Switch rail only

·ø4.5

LCM - F1 / F2 - 4.5

Switch rail

·ø6, ø8

LCM - F2 - 6 - 10

Switch rail
Ⓐ Bore size
Ⓑ Stroke

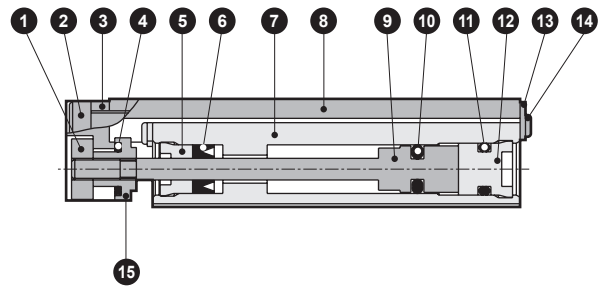
How to order discrete positioning pin

LCM - J* - 4.5

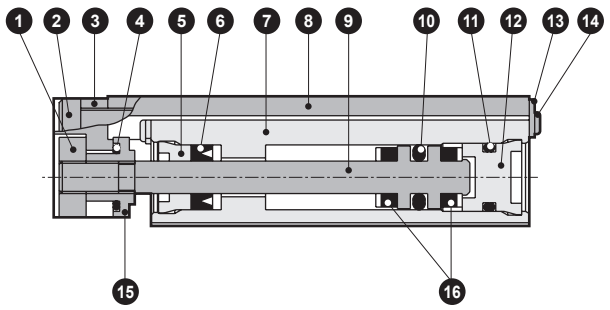
Positioning pin
Number of pins

Internal structure and parts list

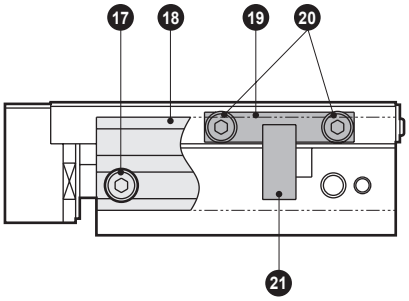
● LCM-4.5



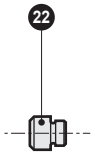
● LCM-6.8



● LCM-4.5 to 8 With magnet/switch rail



·Positioning pin



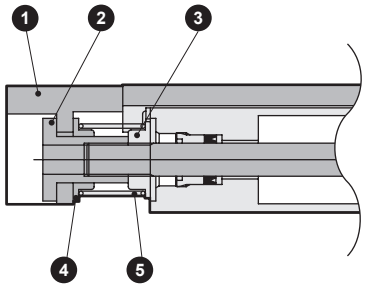
Cannot be disassembled

Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Floating bush A	Stainless steel		12	Cover	Acetal resin	
2	Hexagon socket head cap screw	Stainless steel		13	Stop plate	Stainless steel	
3	End plate	Aluminum alloy		14	Small machine screw	Stainless steel	
4	O-ring	Nitrile rubber		15	Floating bush B	Stainless steel	
5	Rod cover	Acetal resin		16	Cushion rubber	Urethane rubber (ø6, ø8)	
6	Rod packing	Nitrile rubber		17	Hexagon socket head cap screw	Stainless steel	
7	Cylinder body	Stainless steel		18	Switch rail	Aluminum alloy	
8	Slide table	Stainless steel		19	Plate	Aluminum alloy	
9	Piston	Stainless steel		20	Hexagon socket head cap screw	Stainless steel	
10	Piston packing	Nitrile rubber		21	Magnet	Plastic	
11	O-ring	Nitrile rubber		22	Positioning pin	Steel	

Internal structure and parts list

● LCM-4.5 to 8　With buffer

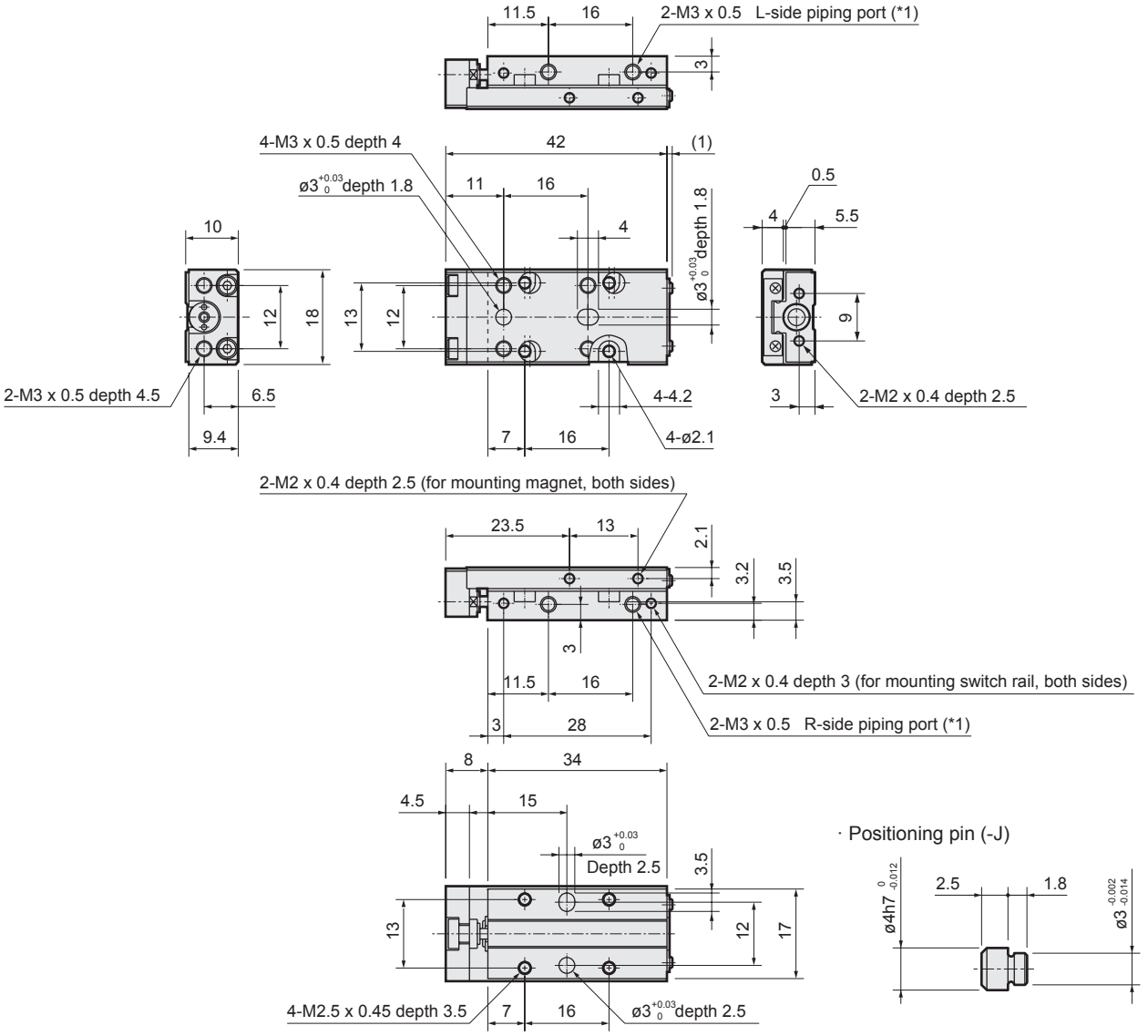


Parts list

No.	Part name	Material	Remarks
1	End plate	Aluminum alloy	
2	Floating bush A	Stainless steel	
3	Floating bush B	Stainless steel	
4	Spring holder	Copper alloy	
5	Coil spring	Stainless steel	

Dimensions (bore size: ø4.5)

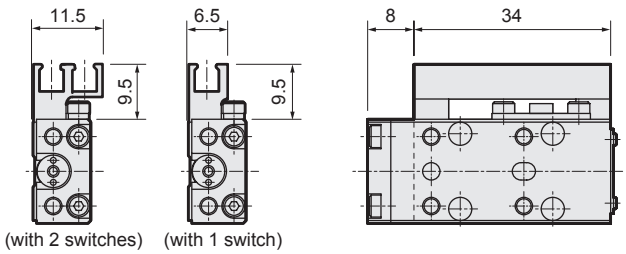
● LCM-4.5



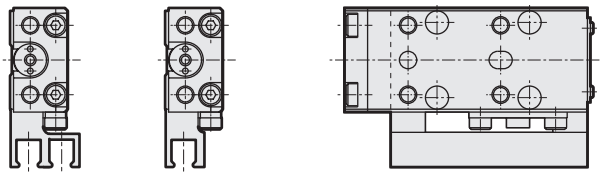
· Positioning pin (-J)

(*1) Plug is attached to the opposite side to the piping port specified with the model No.

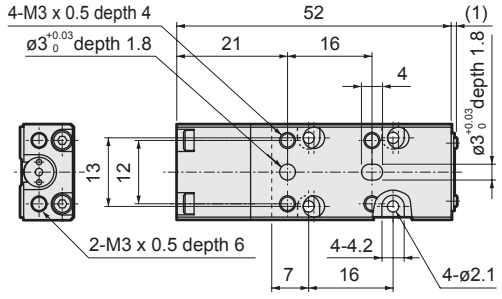
· With magnet/cylinder switch (piping direction: -R)

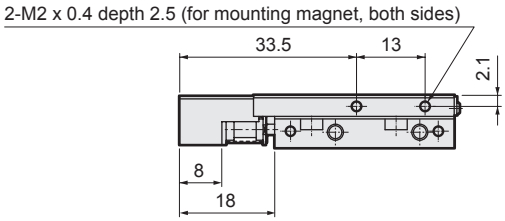


· With magnet/cylinder switch (piping direction: -L)



· With buffer (-B)

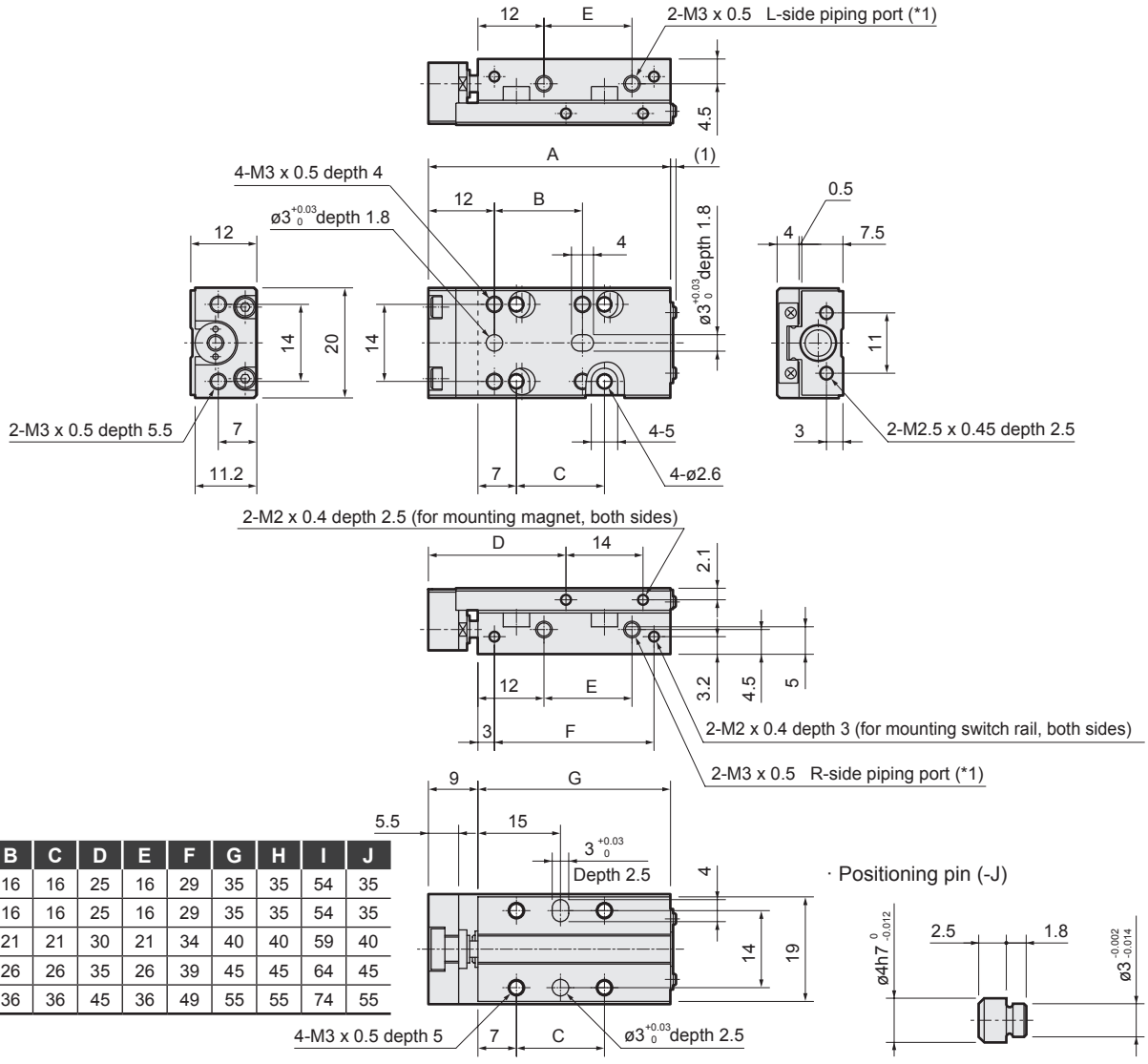




Note: Refer to page 47 for switch mounting position dimensions.

Dimensions (bore size: ø6)

● LCM-6

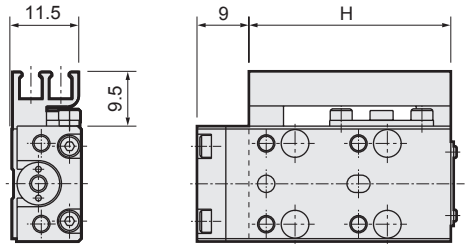


Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	49	21	21	30	21	34	40	40	59	40
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

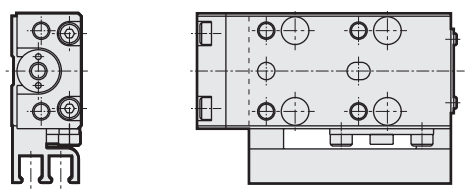
· Positioning pin (-J)

(*1) Plug is attached to the opposite side to the piping port specified with the model No.

· With magnet/cylinder switch (piping direction: -R)

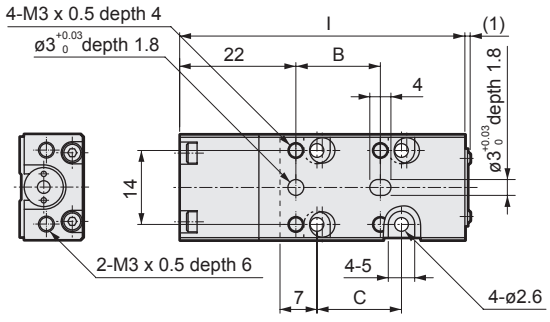


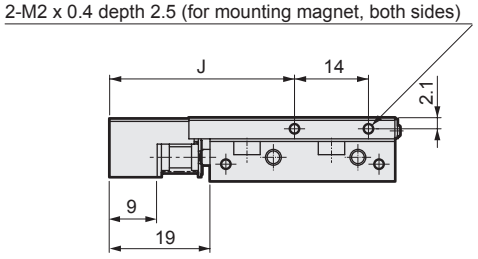
· With magnet/cylinder switch (piping direction: -L)



Note: Refer to page 47 for switch mounting position dimensions.

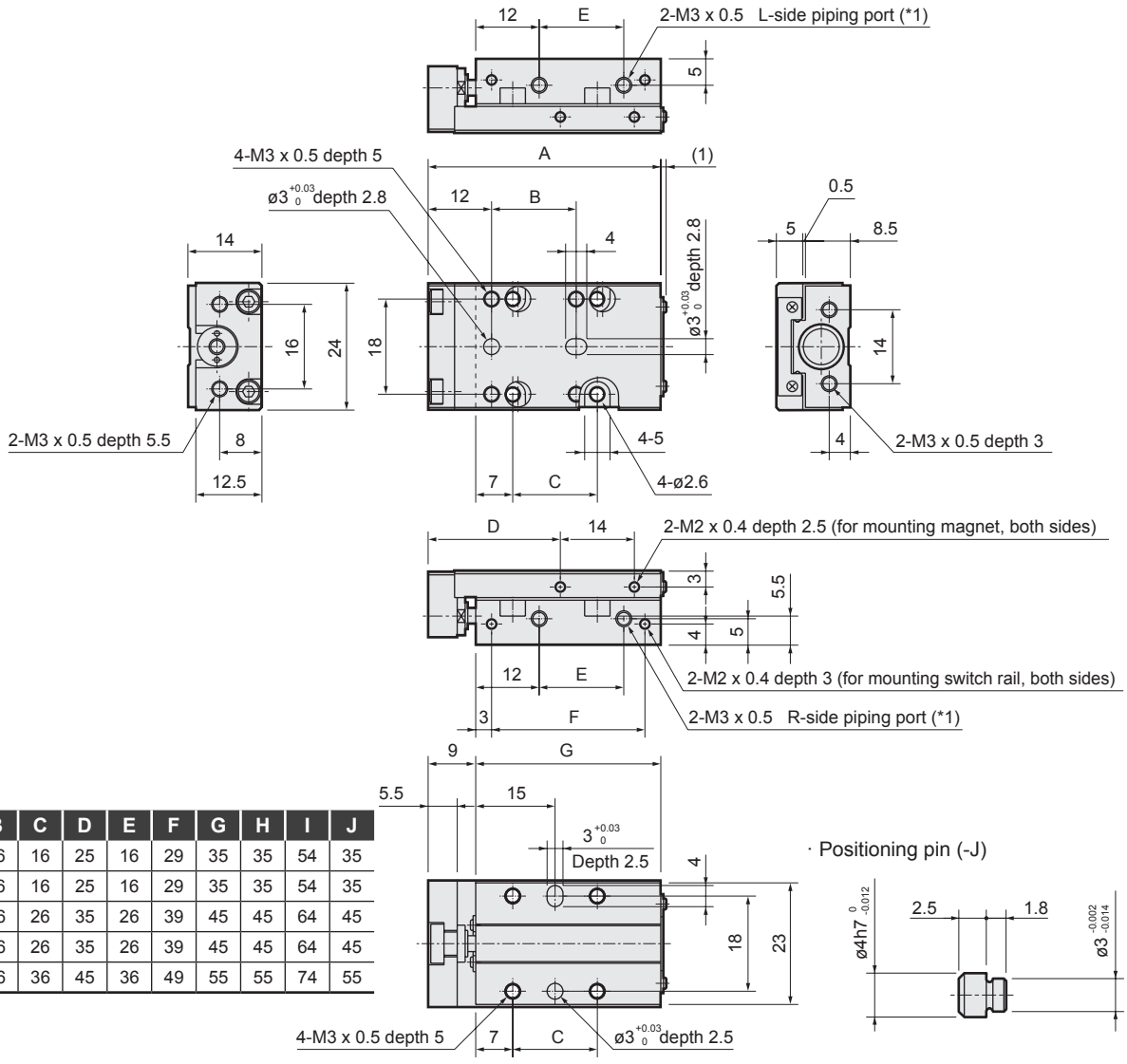
· With buffer (-B)





Dimensions (bore size: ø8) CAD

● LCM-8

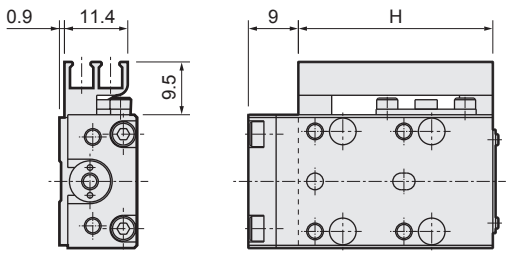


Stroke	A	B	C	D	E	F	G	H	I	J
5	44	16	16	25	16	29	35	35	54	35
10	44	16	16	25	16	29	35	35	54	35
15	54	26	26	35	26	39	45	45	64	45
20	54	26	26	35	26	39	45	45	64	45
30	64	36	36	45	36	49	55	55	74	55

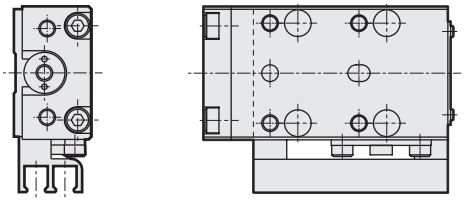
· Positioning pin (-J)

(*1) Plug is attached to the opposite side to the piping port specified with the model No.

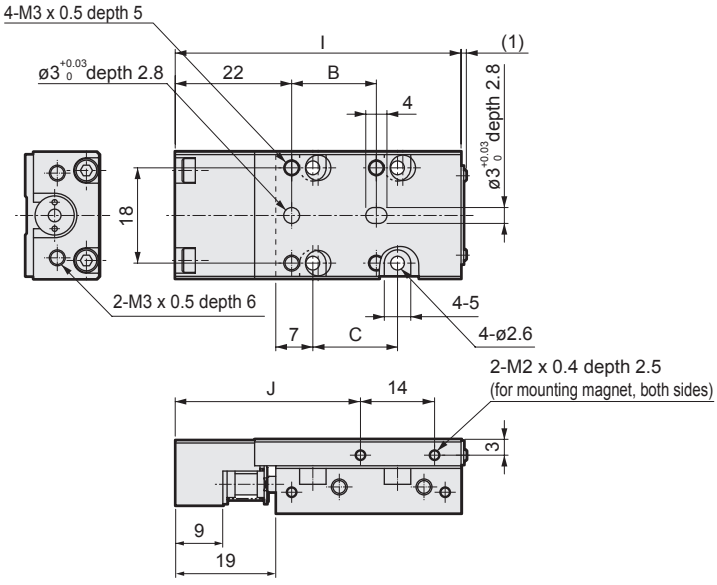
· With magnet/cylinder switch (piping direction: -R)



· With magnet/cylinder switch (piping direction: -L)

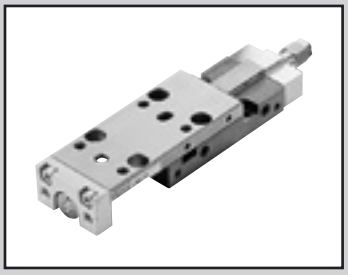


· With buffer (-B)



Note: Refer to page 47 for switch mounting position dimensions.

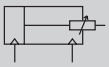
MEMO



Linear slide cylinder Double acting/stroke adjustable (push)

LCM-P Series

● Bore size: ø4.5, ø6, ø8

JIS symbol 

RoHS CAD

Specifications

Descriptions		LCM-P		
Bore size	mm	ø4.5	ø6	ø8
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.25	0.2	0.15
Proof pressure	MPa	1.05		
Ambient temperature	°C	0 to 60		
Port size		M3		
Stroke tolerance	mm	+1.0 0		
Working piston speed	mm/s	30 to 500		
Cushion		No		
Lubrication		Not required (use turbine oil class 1 ISO VG32 if lubrication is necessary))		
Adjustable stroke range	mm	-5 to 0		
Repeatability	mm	±0.02		
Allowable absorbed energy	J	Refer to the table on page 50.		

With buffer specifications

Descriptions			LCM-*-*-*-B
Buffer stroke		mm	4(MAX)
Buffer part spring load	When set	N	0.3
	Operating	N	0.7

Stroke

Bore size (mm)	Standard stroke (mm)	Min. stroke with switch (mm)
ø4.5	5, 10	5
ø6	5, 10, 15, 20, 30	
ø8	5, 10, 15, 20, 30	

*1: Products with stroke other than standard stroke are not available.

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/F3YV
Applications	Programmable Controller dedicated	Programmable For controller, relay	Programmable Controller dedicated		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20mA	50 mA or less	5 to 20mA (*3)		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m: 10 3 m: 29						

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : The F-switch uses a bend-resistant lead wire.

Cylinder weight

Unit: g

Stroke(mm)	5		10		15		20		30		Additional weight	
Bore size(mm)	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	With buffer	Weight per switch
ø4.5	49	53	49	53	-	-	-	-	-	-	3	Refer to the weight in the switch specifications.
ø6	68	73	68	73	77	83	86	92	104	111	4	
ø8	97	102	97	102	120	126	120	126	143	150	5	

Theoretical thrust table

Unit: N

Bore size(mm)	Working pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	-	3.8	5.1	6.4	7.7	8.9
ø6	4.2	6.4	8.5	10.6	12.7	14.8
ø8	8.6	13.0	17.3	21.6	25.9	30.2

How to order

● Without switch (without magnet for switch)

LCM-P - 6 - 10 - R ——— J2

● With switch (built-in magnet for switch)

LCM-P - 6 - 10 - R - F2H - R - J2

Ⓐ Bore size
Ⓑ Stroke
Ⓒ Piping direction
Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓕ Option

Code	Description
Ⓐ Bore size (mm)	
4.5	ø4.5
6	ø6
8	ø8

Ⓑ Stroke (mm)

		Bore size		
		ø4.5	ø6	ø8
5	5	●	●	●
10	10	●	●	●
15	15	-	●	●
20	20	-	●	●
30	30	-	●	●

Ⓒ Piping direction	
R	Right from rod side
L	Left from rod side

Ⓓ Switch model No.

Straight lead wire	L-shaped lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
-	**F2S***	Proximity		●	1-color LED	2-wire
F2H*	**F2V***			●		
-	**F3S***			●		3-wire
F3H*	**F3V***			●		
F3PH*	**F3PV***			●	1 color display (PNP output) (made to order)	3-wire
F2YH*	**F2YV***			●	2-color LED	2-wire
F3YH*	**F3YV***			●		3-wire

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓕ Option	
B	With buffer
M *1	With magnet
F1 *1, 2	With magnet + switch rail (one switch groove)
F2 *1	With magnet + switch rail (two switch grooves)
J*	With positioning pin (*···· number of pins)

⚠ Precautions for model No. selection

*1: Can be omitted if the switch model No. is specified.
*2: Available only for ø4.5.

[Example of model No.]

LCM-P-6-10-R-F2H-R-J2

Model No. : Linear slide cylinder, double acting/stroke adjustable (push)

Ⓐ Bore size : ø6 mm
Ⓑ Stroke : 10 mm
Ⓒ Piping direction : Right when viewed from rod side
Ⓓ Switch model No. : Proximity switch F2H, lead wire 1 m
Ⓔ Switch quantity : 1 on rod side
Ⓕ Option : With positioning pin (2)

How to order switch

● Switch body + switch rail + magnet

LCM - F2H - R - 6 - 10

Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓐ Bore size
Ⓑ Stroke

● Switch body only

SW - F2H

Ⓓ Switch model No.

● Magnet only

LCM - M - 6

Magnet
Ⓐ Bore size

● Switch rail only

·ø4.5

LCM - F1 / F2 - 4.5

Switch rail

·ø6, ø8

LCM - F2 - 6 - 10

Switch rail
Ⓐ Bore size
Ⓑ Stroke

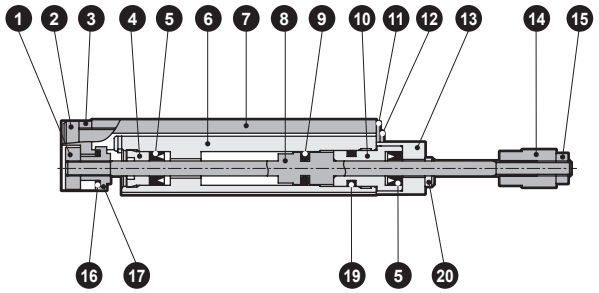
How to order discrete positioning pin

LCM - J* - 4.5

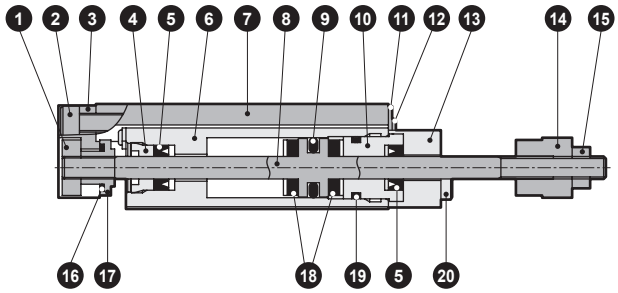
Positioning pin
Number of pins

Internal structure and parts list

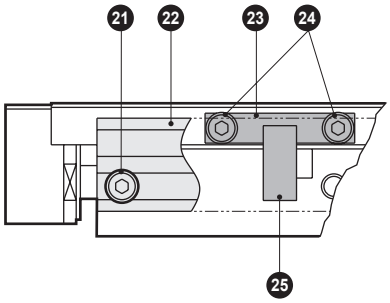
● LCM-P-4.5



● LCM-P-6,8



● LCM-P-4.5 to 8 With magnet/switch rail



· Positioning pin (-J)

Cannot be disassembled

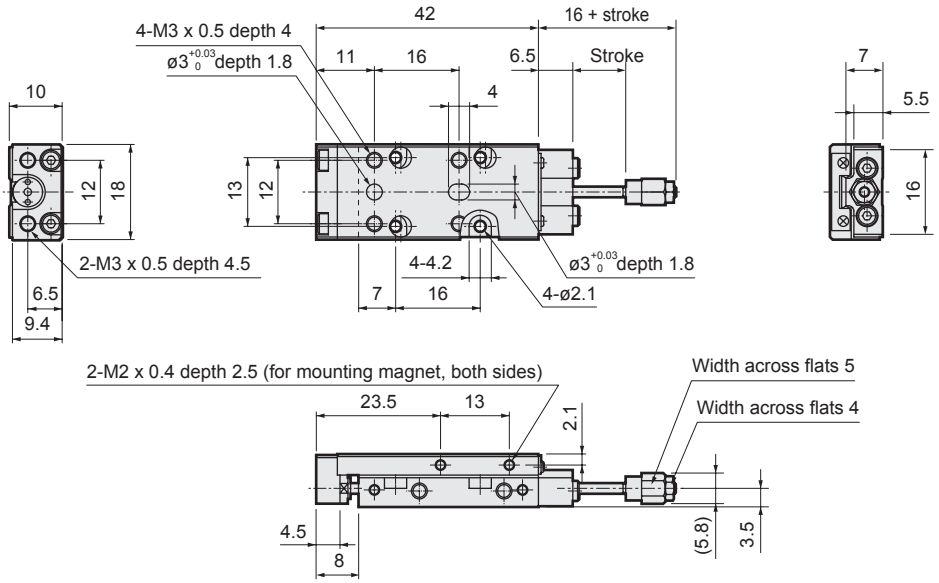
Parts list

No.	Part name	Material	Remarks
1	Floating bush A	Stainless steel	
2	Hexagon socket head cap screw	Stainless steel	
3	End plate	Aluminum alloy	
4	Rod cover	Acetal resin	
5	Rod packing	Nitrile rubber	
6	Cylinder body	Stainless steel	
7	Slide table	Stainless steel	
8	Piston	Stainless steel	
9	Piston packing	Nitrile rubber	
10	Cover	Aluminum alloy	
11	Stop plate	Stainless steel	
12	Small machine screw	Stainless steel	
13	Stopper A	Steel	Nickel plating

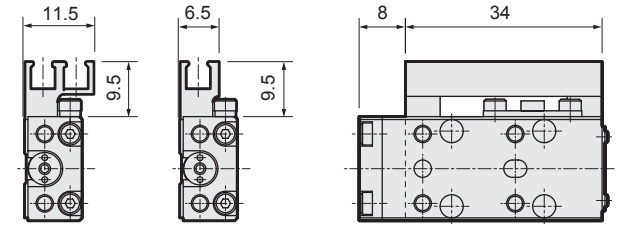
No.	Part name	Material		Remarks
14	Adjustable stopper	Steel		Nickel plating
15	Hexagon nut	ø4.5	Stainless steel	
		ø6,ø8	Steel	Nickel plating
16	O-ring	Nitrile rubber		
17	Floating bush B	Stainless steel		
18	Cushion rubber	Urethane rubber (ø6, ø8)		
19	O-ring	Nitrile rubber		
20	Hexagon socket head cap screw	Stainless steel		
21	Hexagon socket head cap screw	Stainless steel		
22	Switch rail	Aluminum alloy		
23	Plate	Aluminum alloy		
24	Hexagon socket head cap screw	Stainless steel		
25	Magnet	Plastic		
26	Positioning pin	Steel		

Dimensions (bore size: ø4.5)

● LCM-P-4.5

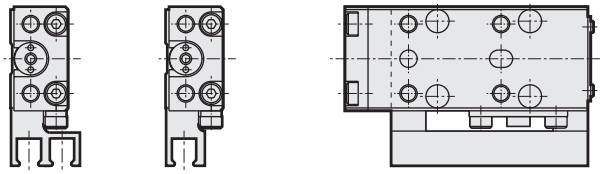


· With magnet/cylinder switch (piping direction: -R)



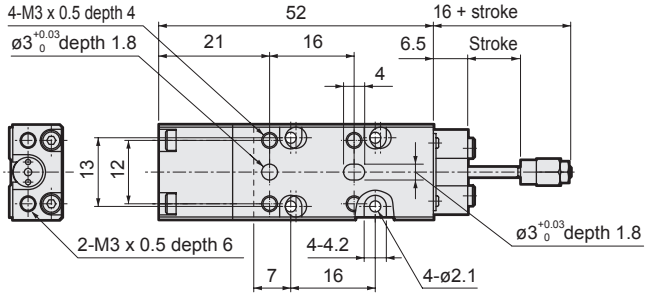
(with 2 switches) (with 1 switch)

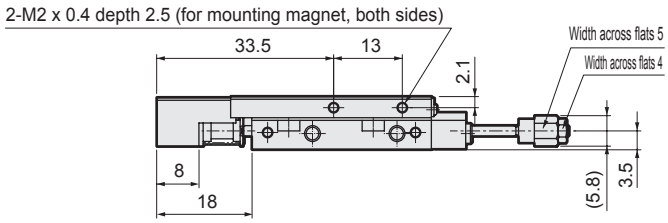
· With magnet/cylinder switch (piping direction: -L)



Note : Refer to page 47 for switch mounting position dimensions.

· With buffer (-B)

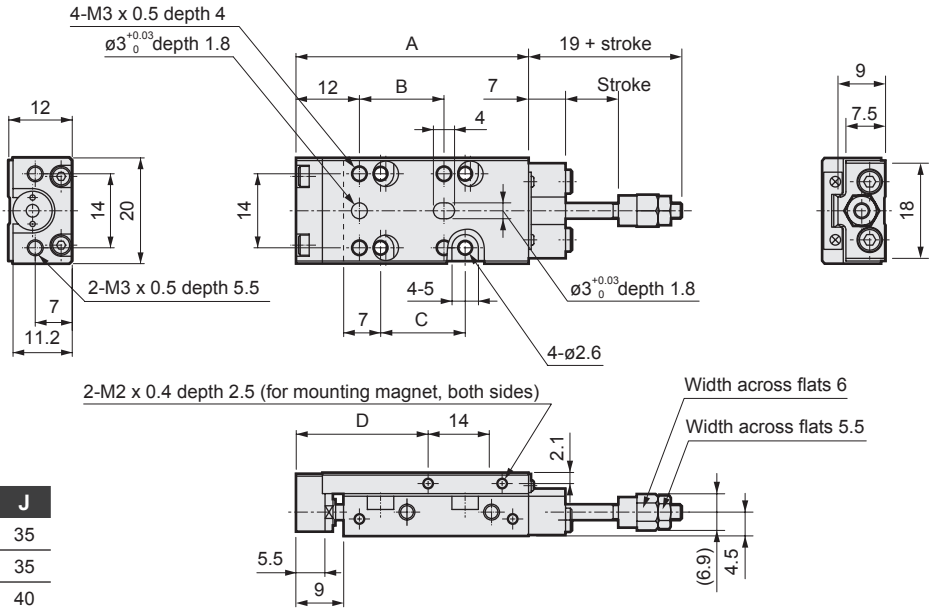




Dimensions other than those listed above are the same as those of double acting/single rod.
Refer to page 14.

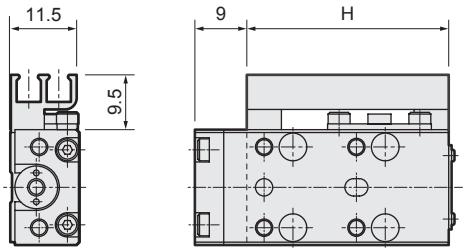
Dimensions (bore size: ø6) CAD

● LCM-P-6

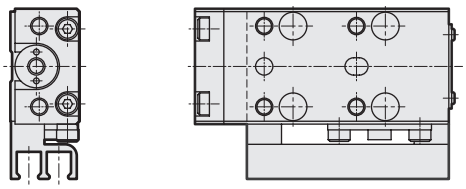


Stroke	A	B	C	D	H	I	J
5	44	16	16	25	35	54	35
10	44	16	16	25	35	54	35
15	49	21	21	30	40	59	40
20	54	26	26	35	45	64	45
30	64	36	36	45	55	74	55

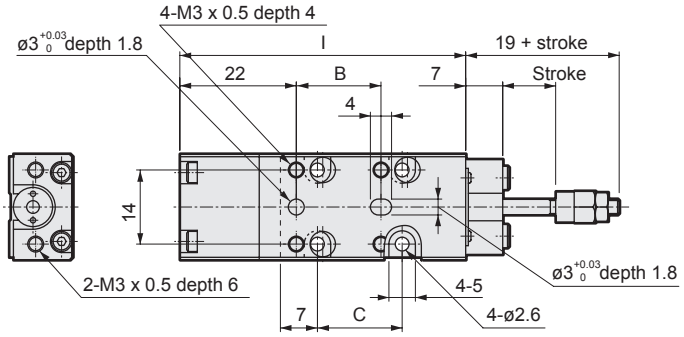
· With magnet/cylinder switch (piping direction: -R)

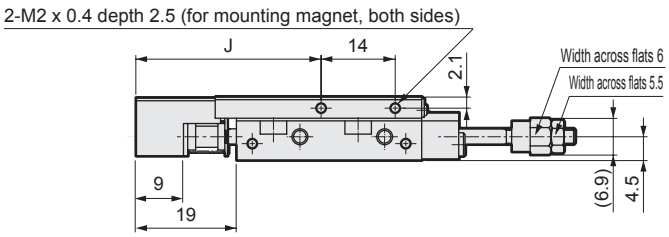


· With magnet/cylinder switch (piping direction: -L)



· With buffer (-B)



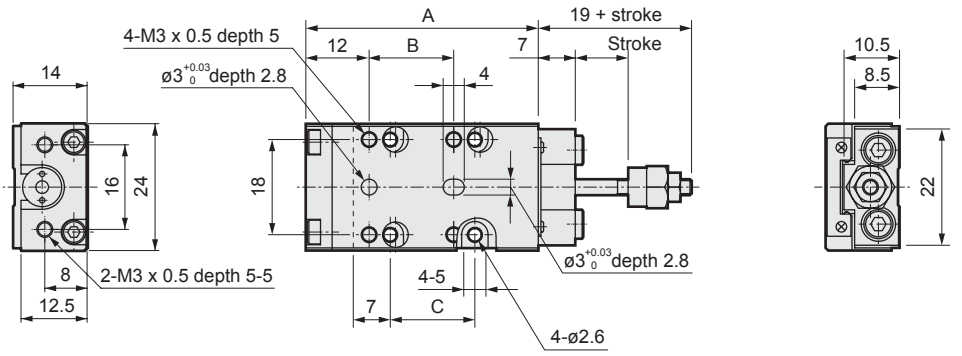


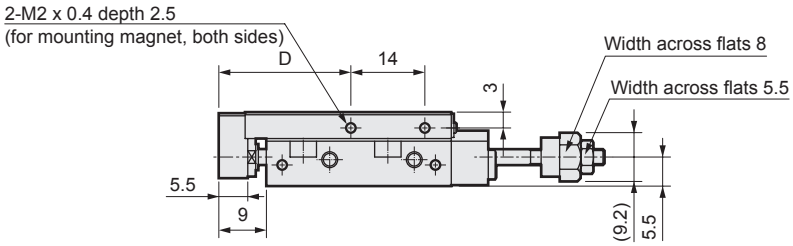
Note : Refer to page 47 for switch mounting position dimensions.

Dimensions other than those listed above are the same as those of double acting/single rod.
Refer to page 15.

Dimensions (bore size: ø8) CAD

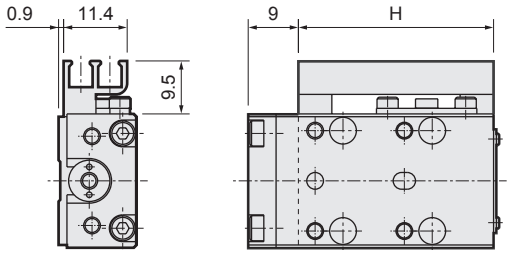
● LCM-P-8



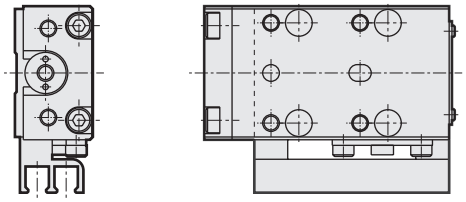


Stroke	A	B	C	D	H	I	J
5	44	16	16	25	35	54	35
10	44	16	16	25	35	54	35
15	54	26	26	35	45	64	45
20	54	26	26	35	45	64	45
30	64	36	36	45	55	74	55

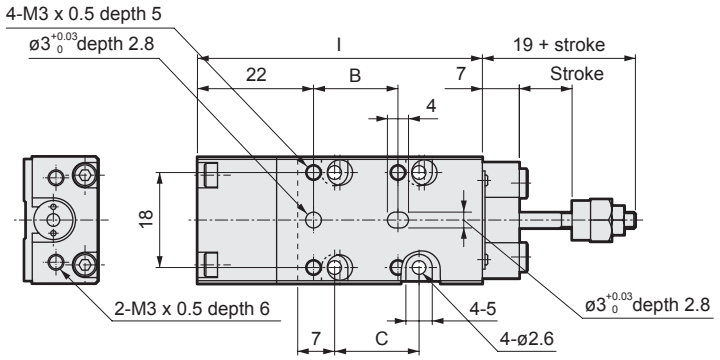
· With magnet/cylinder switch (piping direction: -R)

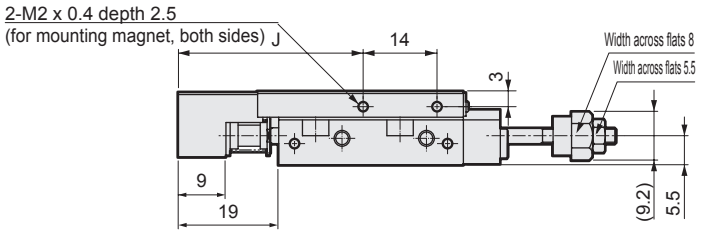


· With magnet/cylinder switch (piping direction: -L)



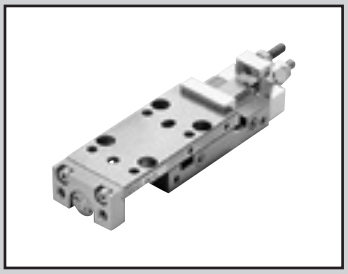
· With buffer (-B)





Note : Refer to page 47 for switch mounting position dimensions.

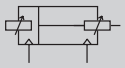
Dimensions other than those listed above are the same as those of double acting/single rod.
Refer to page 16.



Linear slide cylinder double acting/stroke adjustable (push/pull)

LCM-R Series

● Bore size: ø4.5, ø6, ø8

JIS symbol 

Specifications

Descriptions			LCM-R		
Bore size		mm	ø4.5	ø6	ø8
Actuation			Double acting		
Working fluid			Compressed air		
Max. working pressure		MPa	0.7		
Min. working pressure		MPa	0.25	0.2	0.15
Proof pressure		MPa	1.05		
Ambient temperature		°C	0 to 60		
Port size			M3		
Stroke tolerance		mm	+1.0 0		
Working piston speed		mm/s	30 to 500		
Cushion	Push		No		
	Pull		No		
Lubrication			Not required (use turbine oil class 1 ISO VG32 if lubrication is necessary))		
Adjustable stroke range	Push	mm	-5 to 0		
	Pull	mm	-7 to 0		
Repeatability		mm	±0.02		
Allowable absorbed energy		J	Refer to the table on page 50.		

With buffer specifications

Descriptions			LCM-*-*-*-B
Buffer stroke		mm	4(MAX)
Buffer part spring load	When set	N	0.3
	Operating	N	0.7

Stroke

Bore size (mm)	Standard stroke (mm)	Min. stroke with switch (mm)
ø4.5	5/10	5
ø6	5/10/15/20/30	
ø8	5/10/15/20/30	

*1: Products with stroke other than standard stroke are not available.

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/F3YV
Applications	Dedicated for programmable controller	Programmable For controller, relay	Programmable Controller dedicated		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20mA	50 mA or less	5 to 20mA (*3)		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/greenLED (Lit when ON)	Yellow LED (Lit when ON)	YellowLED (Lit when ON)	Red/greenLED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m: 10 3 m: 29						

*3:Max. load current: 20mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25˚C....(5 to 10mA with 60°C)...)
*4: The F-switch uses a bend-resistant lead wire.

Cylinder weight

Unit: g

Stroke(mm) / Bore size(mm)	5		10		15		20		30		Additional weight	
	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	With buffer	Weight per switch
ø4.5	52	56	52	56	-	-			-	-	3	Refer to the weight in the switch specifications.
ø6	71	76	71	76	80	86	89	95	107	114	4	
ø8	100	105	100	105	123	129	123	129	146	153	5	

Theoretical thrust table

Unit: N

Bore size(mm)	Working pressure MPa					
	0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	-	3.8	5.1	6.4	7.7	8.9
ø6	4.2	6.4	8.5	10.6	12.7	14.8
ø8	8.6	13.0	17.3	21.6	25.9	30.2

How to order

● Without switch (without magnet for switch)

LCM-R - 6 - 10 - R ——— J2

● With switch (built-in magnet for switch)

LCM-R - 6 - 10 - R - F2H - R - J2

Ⓐ Bore size
Ⓑ Stroke
Ⓒ Piping direction
Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓕ Option

Code	Description
Ⓐ Bore size (mm)	
4.5	ø4.5
6	ø6
8	ø8

Ⓑ Stroke (mm)

		Bore size		
		ø4.5	ø6	ø8
5	5	●	●	●
10	10	●	●	●
15	15	-	●	●
20	20	-	●	●
30	30	-	●	●

Ⓒ Piping direction	
R	Right from rod side
L	Left from rod side

Ⓓ Switch model No.

Straight lead wire	L-shaped lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
-	**F2S***	Proximity		●	1-color LED	2-wire
F2H*	**F2V***			●		
-	**F3S***			●		3-wire
F3H*	**F3V***			●		
F3PH*	**F3PV***			●	1 color display (PNP output) (made to order)	3-wire
F2YH*	**F2YV***			●	2-color LED	2-wire
F3YH*	**F3YV***			●		3-wire

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓕ Option	
B	With buffer
M *1	With magnet
F1 *1, 2	With magnet + switch rail (one switch groove)
F2 *1	With magnet + switch rail (two switch grooves)
J*	With positioning pin (*···· number of pins)

⚠ Precautions for model No. selection

*1: Can be omitted if the switch model No. is specified.
*2: Available only for ø4.5.

[Example of model No.]

LCM-R-6-10-R-F2H-R-J2

Model : Linear slide cylinder,
Double acting/stroke adjustable/push-pull type

Ⓐ Bore size : ø6 mm
Ⓑ Stroke : 10 mm
Ⓒ Piping direction : Right when viewed from rod side
Ⓓ Switch model No. : Proximity switch F2H, lead wire 1 m
Ⓔ Switch quantity : 1 on rod side
Ⓕ Option : With positioning pin (2)

How to order switch

● Switch body + switch rail + magnet

LCM - F2H - R - 6 - 10

Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓐ Bore size
Ⓑ Stroke

● Switch body only

SW - F2H

Ⓓ Switch model No.

● Magnet only

LCM - M - 6

Magnet
Ⓐ Bore size

● Switch rail only

·ø4.5

LCM - F1 / F2 - 4.5

Switch rail

·ø6, ø8

LCM - F2 - 6 - 10

Switch rail
Ⓐ Bore size
Ⓑ Stroke

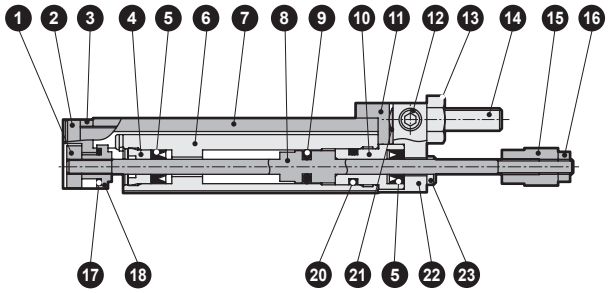
How to order discrete positioning pin

LCM - J* - 4.5

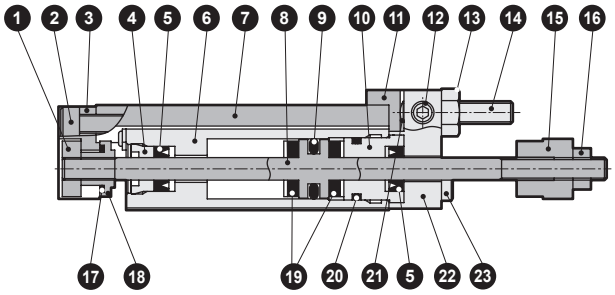
Positioning pin
Number of pins

Internal structure and parts list

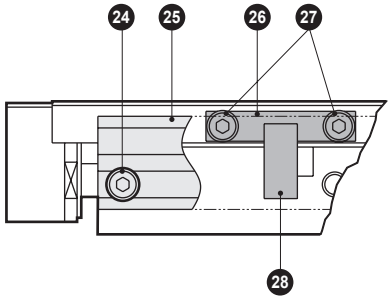
● LCM-R-4.5



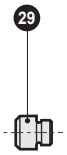
● LCM-R-6,8



● LCM-R-4.5 to 8 With magnet/switch rail



· Positioning pin (-J)



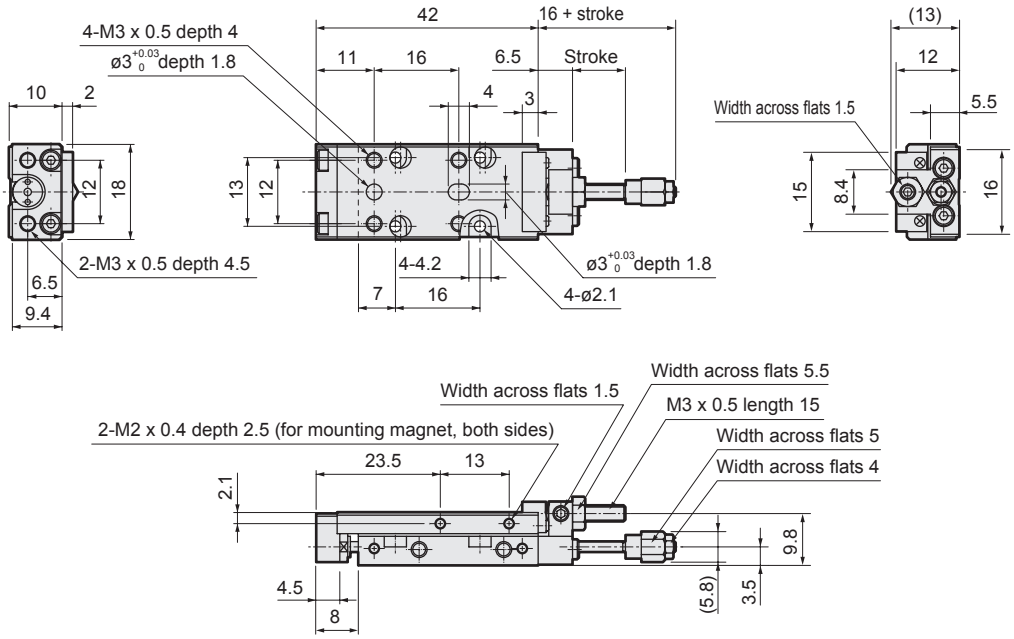
Cannot be disassembled

Parts list

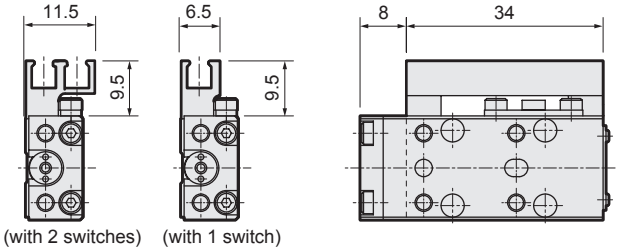
No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Floating bush A	Stainless steel		16	Hexagon nut	ø4.5 Stainless steel	
2	Hexagon socket head cap screw	Stainless steel				ø6,ø8 Steel	Nickel plating
3	End plate	Aluminum alloy		17	O-ring	Nitrile rubber	
4	Rod cover	Acetal resin		18	Floating bush B	Stainless steel	
5	Rod packing	Nitrile rubber		19	Cushion rubber	Urethane rubber (ø6, ø8)	
6	Cylinder body	Stainless steel		20	O-ring	Nitrile rubber	
7	Slide table	Stainless steel		21	Small machine screw	Stainless steel	
8	Piston	Stainless steel		22	Stopper A	Steel	Nickel plating
9	Piston packing	Nitrile rubber		23	Hexagon socket head cap screw	Stainless steel	
10	Cover	Aluminum alloy		24	Hexagon socket head cap screw	Stainless steel	
11	Stopper B	Steel	Nickel plating	25	Switch rail	Aluminum alloy	
12	Small machine screw	Stainless steel		26	Plate	Aluminum alloy	
13	Hexagon nut	Stainless steel		27	Hexagon socket head cap screw	Stainless steel	
14	Stopper bolt	Stainless steel		28	Magnet	Plastic	
15	Adjustable stopper	Steel	Nickel plating	29	Positioning pin	Steel	

Dimensions (bore size: ø4.5) CAD

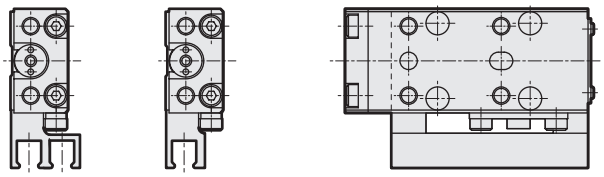
● LCM-R-4.5



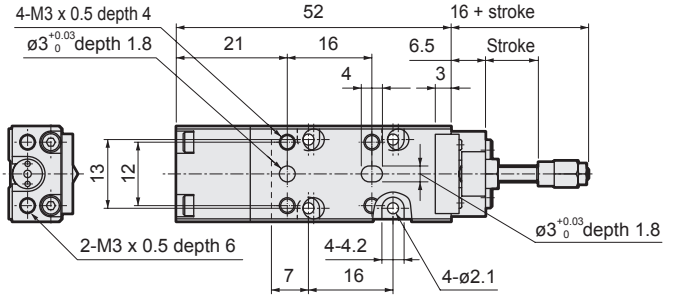
· With magnet/cylinder switch (piping direction: -R)

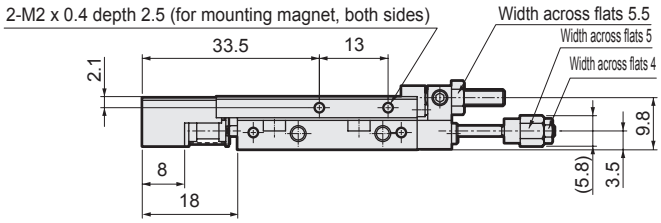


· With magnet/cylinder switch (piping direction: -L)



· With buffer (-B)



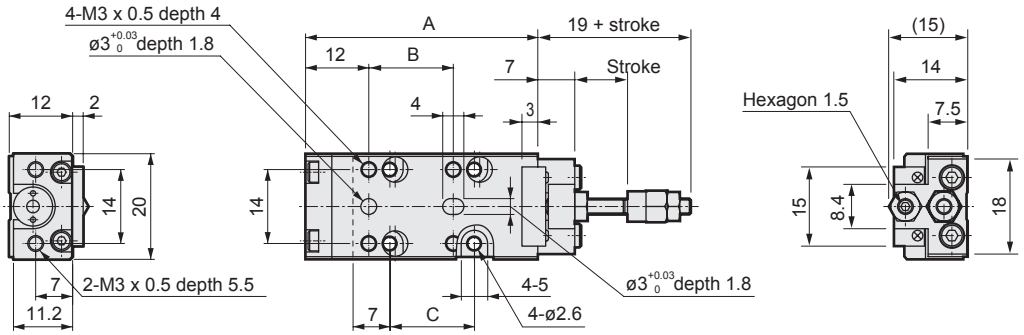


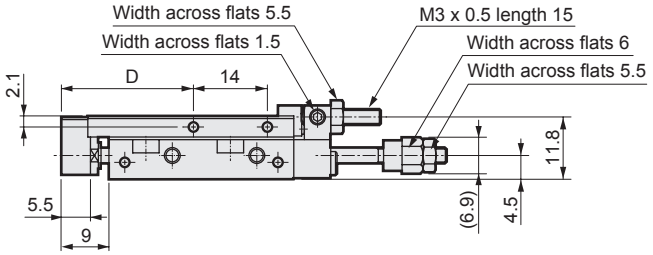
Note : Refer to page 47 for switch mounting position dimensions.

Dimensions other than those listed above are the same as those of double acting/single rod. Refer to page 14.

Dimensions (bore size: ø6) CAD

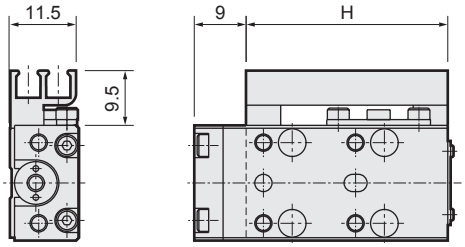
● LCM-R-6



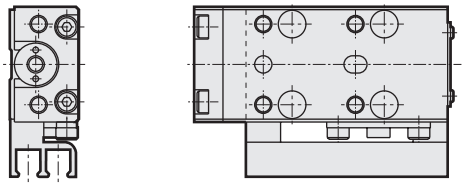


Stroke	A	B	C	D	H	I	J
5	44	16	16	25	35	54	35
10	44	16	16	25	35	54	35
15	49	21	21	30	40	59	40
20	54	26	26	35	45	64	45
30	64	36	36	45	55	74	55

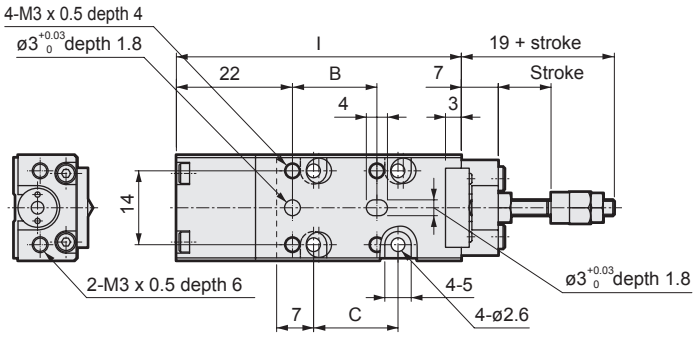
· With magnet/cylinder switch (piping direction: -R)

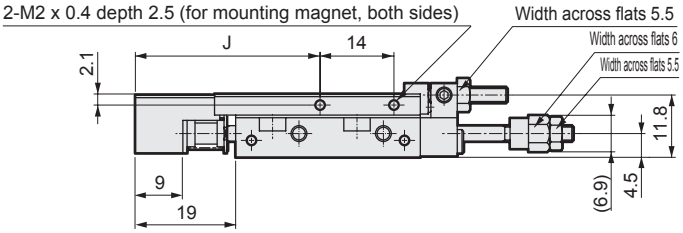


· With magnet/cylinder switch (piping direction: -L)



· With buffer (-B)



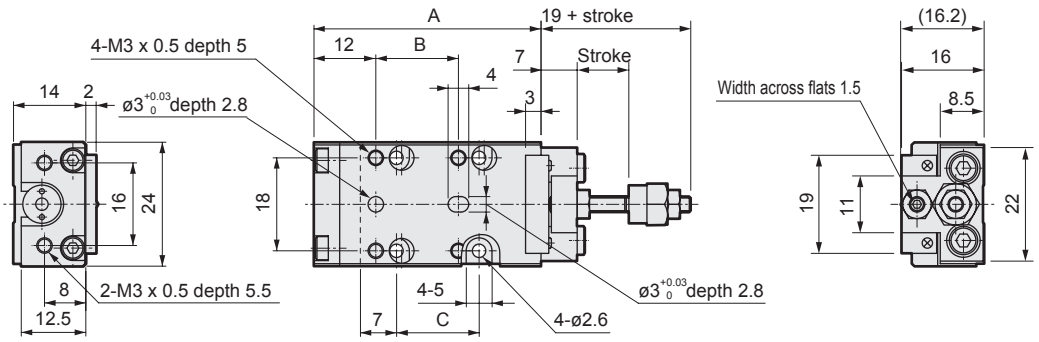


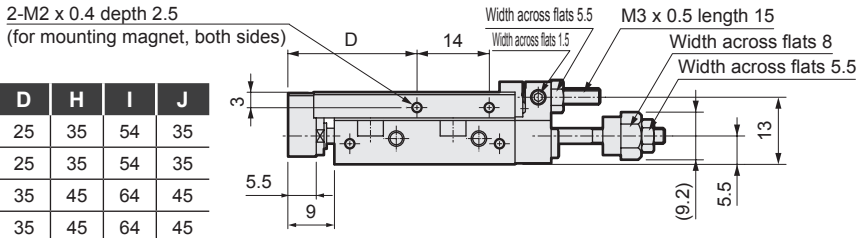
Note : Refer to page 47 for switch mounting position dimensions.

Dimensions other than those listed above are the same as those of double acting/single rod.
Refer to page 15.

Dimensions (bore size: ø8) CAD

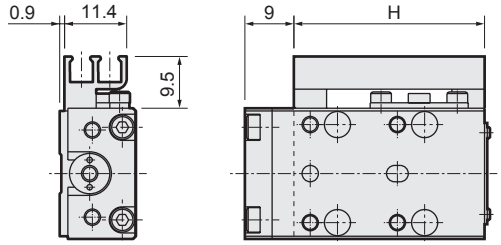
● LCM-R-8



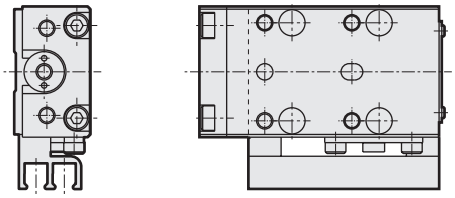


Stroke	A	B	C	D	H	I	J
5	44	16	16	25	35	54	35
10	44	16	16	25	35	54	35
15	54	26	26	35	45	64	45
20	54	26	26	35	45	64	45
30	64	36	36	45	55	74	55

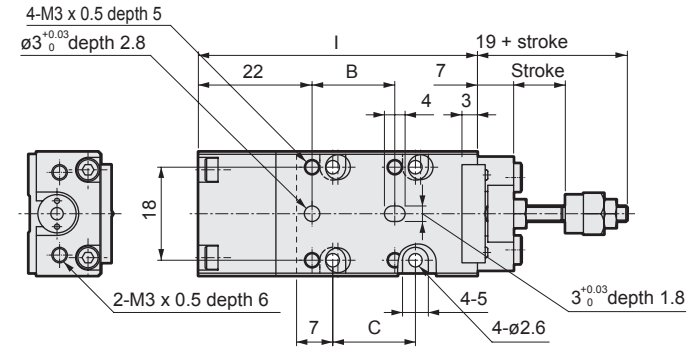
· With magnet/cylinder switch (piping direction: -R)

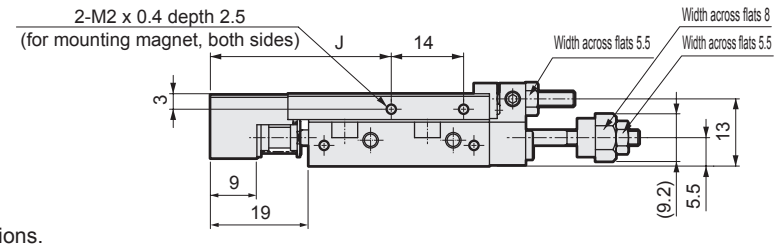


· With magnet/cylinder switch (piping direction: -L)



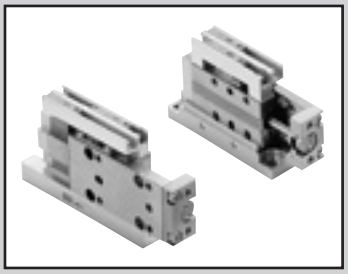
· With buffer (-B)





Note : Refer to page 47 for switch mounting position dimensions.

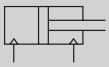
Dimensions other than those listed above are the same as those of double acting/single rod.
Refer to page 16.



Linear slide cylinder Double acting/side mounting

LCM-A Series

● Bore size: ø4.5, ø6, ø8

JIS symbol 

Specifications

Descriptions		LCM-A		
Bore size	mm	ø4.5	ø6	ø8
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.2		0.15
Proof pressure	MPa	1.05		
Ambient temperature	°C	0 to 60		
Port size		M3		
Stroke tolerance	mm	+1.0 0		
Working piston speed	mm/s	30 to 500		
Cushion		No	With rubber cushion	
Lubrication		Not required (use turbine oil class 1 ISO VG32 if lubrication is necessary))		
Allowable absorbed energy	J	Refer to the table on page 50.		

With buffer specifications

Descriptions			LCM-*-*-*-B
Buffer stroke		mm	4(MAX)
Buffer part spring load	When set	N	0.3
	Operating	N	0.7

Stroke

Bore size (mm)	Standard stroke (mm)	Min. stroke with switch (mm)
ø4.5	5/10	5
ø6	5/10/15/20/30	
ø8	5/10/15/20/30	

*1: Products with stroke other than standard stroke are not available.

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/F3YV
Applications	Dedicated for programmable controller	Programmable For controller, relay	Programmable Controller dedicated		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20mA	50 mA or less	5 to 20mA (*3)		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m: 10 3 m: 29						

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : The F-switch uses a bend-resistant lead wire.

Cylinder weight

Unit: g

Stroke(mm)	5		10		15		20		30		Additional weight	
Bore size(mm)	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	With buffer	Weight per switch
ø4.5	59	63	59	63	-	-	-	-	-	-	3	Refer to the weight in the switch specifications.
ø6	78	83	78	83	88	94	98	104	118	125	4	
ø8	106	111	106	111	132	138	132	138	158	165	5	

Theoretical thrust table

Unit: N

Bore size(mm)	Operating direction	Working pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	Push	3.2	4.8	6.4	8.0	9.5	11.1
	Pull	2.6	3.8	5.1	6.4	7.7	8.9
ø6	Push	5.7	8.5	11.3	14.1	17.0	19.8
	Pull	4.2	6.4	8.5	10.6	12.7	14.8
ø8	Push	10.1	15.1	20.1	25.1	30.2	35.2
	Pull	8.6	13.0	17.3	21.6	25.9	30.2

How to order

● Without switch (without magnet for switch)

LCM-A - 6 - 10 - R ——— J2

● With switch (built-in magnet for switch)

LCM-A - 6 - 10 - R - F2H - R - J2

Ⓐ Bore size
Ⓑ Stroke
Ⓒ Table direction
Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓕ Option

Code	Description
Ⓐ Bore size (mm)	
4.5	ø4.5
6	ø6
8	ø8

Ⓑ Stroke (mm)		Bore size		
		ø4.5	**ø6**	**ø8**
5	5	●	●	●
10	10	●	●	●
15	15	-	●	●
20	20	-	●	●
30	30	-	●	●

Ⓒ Table direction	
R	Right from rod side
L	Left from rod side

Ⓓ Switch model No.						
Straight **lead wire**	L-shaped **lead wire**	**Contact**	**Voltage**		**Indicator**	**Lead wire**
			AC	**DC**		
-	**F2S***	Proximity		●	1-color LED	2-wire
F2H*	**F2V***			●		
-	**F3S***			●		3-wire
F3H*	**F3V***			●		
F3PH*	**F3PV***			●	1 color display (PNP output) (made to order)	3-wire
F2YH*	**F2YV***			●	2-color LED	2-wire
F3YH*	**F3YV***			●		3-wire

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓕ Option	
B	With buffer
M *1	With magnet
F1 *1, 2	With magnet + switch rail (one switch groove)
F2 *1	With magnet + switch rail (two switch grooves)
J*	With positioning pin (*···· number of pins)

⚠ Precautions for model No. selection

*1: Can be omitted if the switch model No. is specified.
*2: Available only for ø4.5.

[Example of model No.]

LCM-A-6-10-R-F2H-R-J2

Model : Linear slide cylinder, double acting/side mounting
Ⓐ Bore size : ø6 mm
Ⓑ Stroke : 10 mm
Ⓒ Piping direction : Right when viewed from rod side
Ⓓ Switch model No. : Proximity switch F2H, lead wire 1 m
Ⓔ Switch quantity : 1 on rod side
Ⓕ Option : With positioning pin (2)

How to order switch

● Switch body + switch rail + magnet

LCM - F2H - R - 6 - 10

Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓐ Bore size
Ⓑ Stroke

● Switch body only

SW - F2H

Ⓓ Switch model No.

● Magnet only

LCM - M - 6

Magnet
Ⓐ Bore size

● Switch rail only

·ø4.5

LCM - F1 / F2 - 4.5

Switch rail

·ø6, ø8

LCM - F2 - 6 - 10

Switch rail
Ⓐ Bore size
Ⓑ Stroke

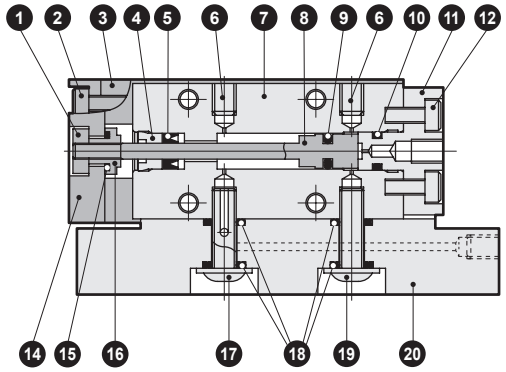
How to order discrete positioning pin

LCM - J* - 4.5

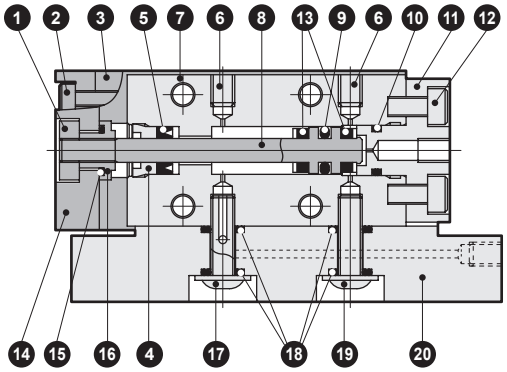
Positioning pin
Number of pins

Internal structure and parts list

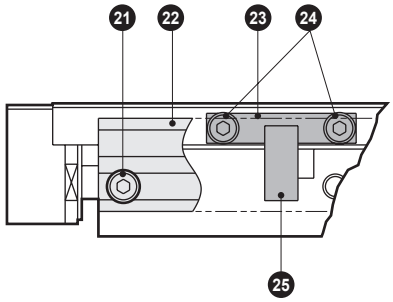
● LCM-A-4.5



● LCM-A-6,8



● LCM-R-4.5 to 8-F With magnet/switch rail



· Positioning pin (-J)

Cannot be disassembled

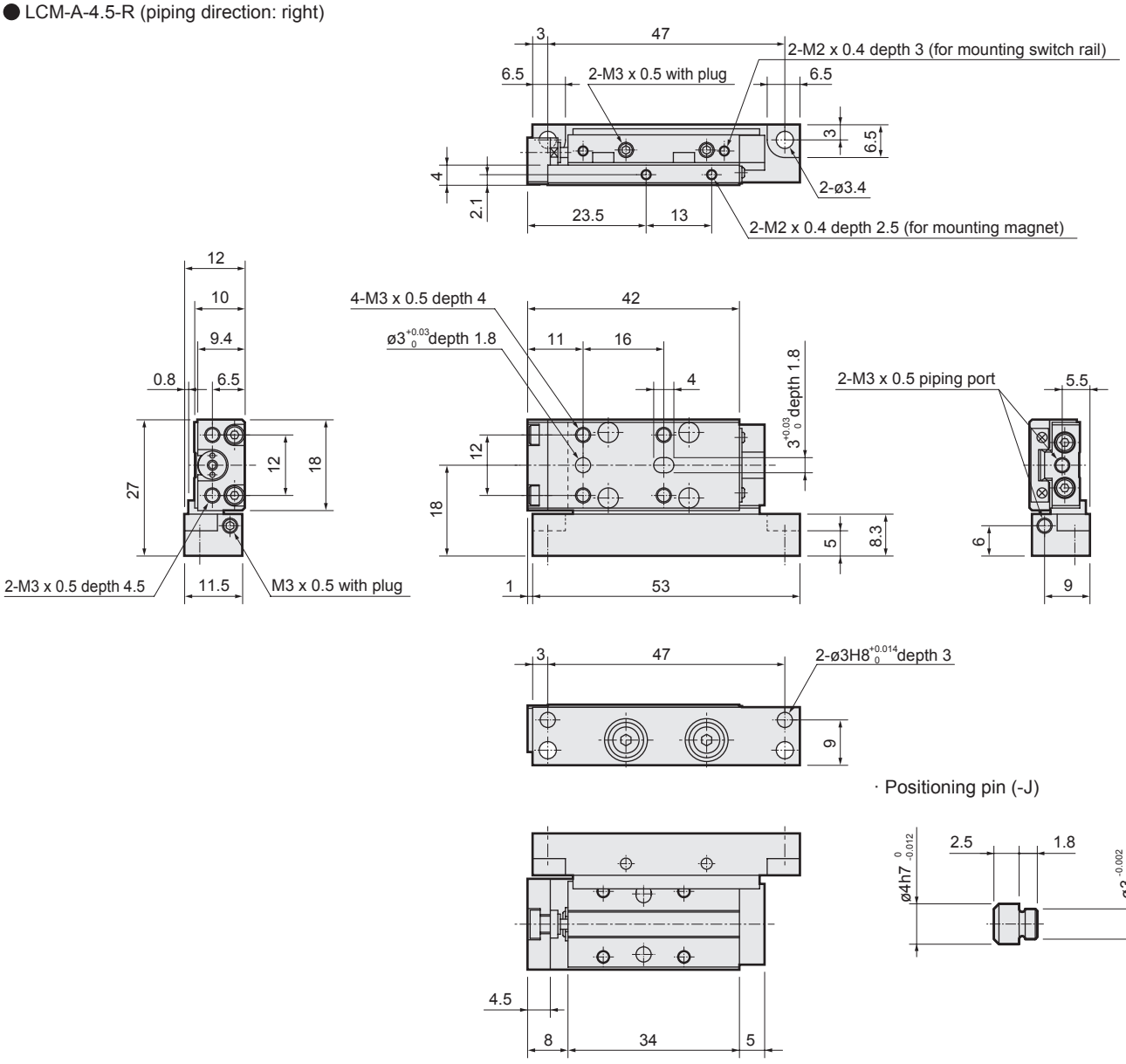
Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Floating bush A	Stainless steel		14	End plate	Aluminum alloy	
2	Hexagon socket head cap screw	Stainless steel		15	O-ring	Nitrile rubber	
3	Slide table	Stainless steel		16	Floating bush B	Stainless steel	
4	Rod cover	Acetal resin		17	Hexagon socket head cap screw	Stainless steel	
5	Rod packing	Nitrile rubber		18	O-ring	Nitrile rubber	
6	Small machine screw	Stainless steel		19	Hexagon socket head cap screw	Stainless steel	
7	Cylinder body	Stainless steel		20	Base	Aluminum alloy	
8	Piston	Stainless steel		21	Hexagon socket head cap screw	Stainless steel	
9	Piston packing	Nitrile rubber		22	Switch rail	Aluminum alloy	
10	O-ring	Nitrile rubber		23	Plate	Aluminum alloy	
11	Head cover	Aluminum alloy	Alumite	24	Hexagon socket head cap screw	Stainless steel	
12	Bolt	Stainless steel		25	Magnet	Plastic	
13	Cushion rubber	Urethane rubber (ø6, ø8)		26	Positioning pin	Steel	

MEMO

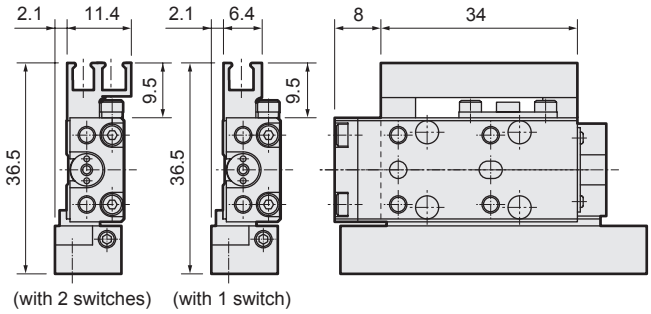
Dimensions (bore size: ø4.5) CAD

● LCM-A-4.5-R (piping direction: right)

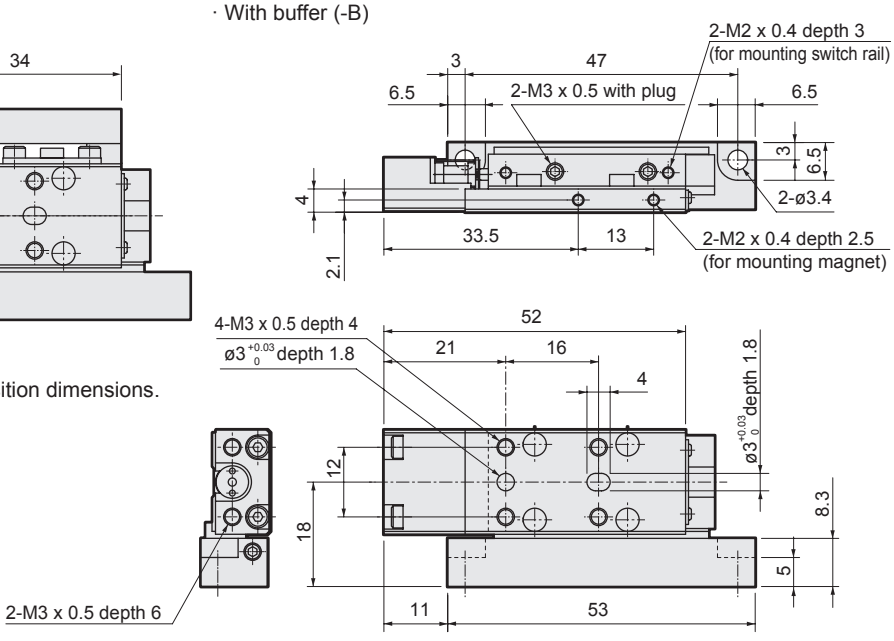


· Positioning pin (-J)

· With magnet/cylinder switch



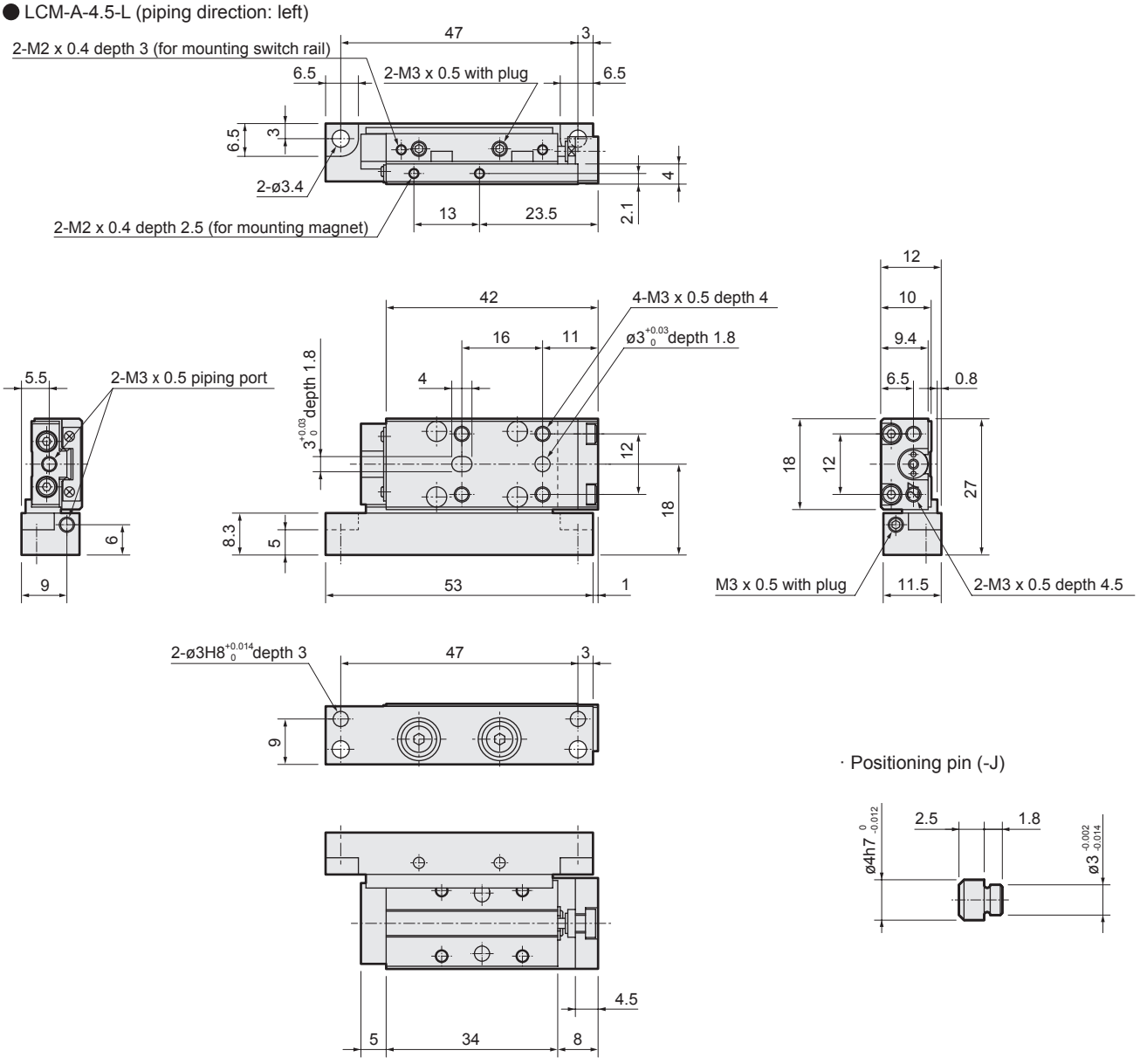
· With buffer (-B)



Note : Refer to page 47 for switch mounting position dimensions.

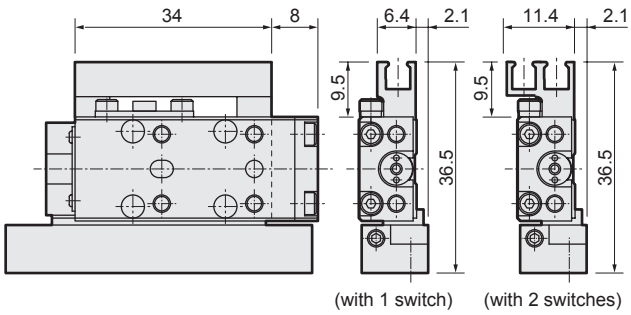
Dimensions (bore size: ø4.5)

● LCM-A-4.5-L (piping direction: left)

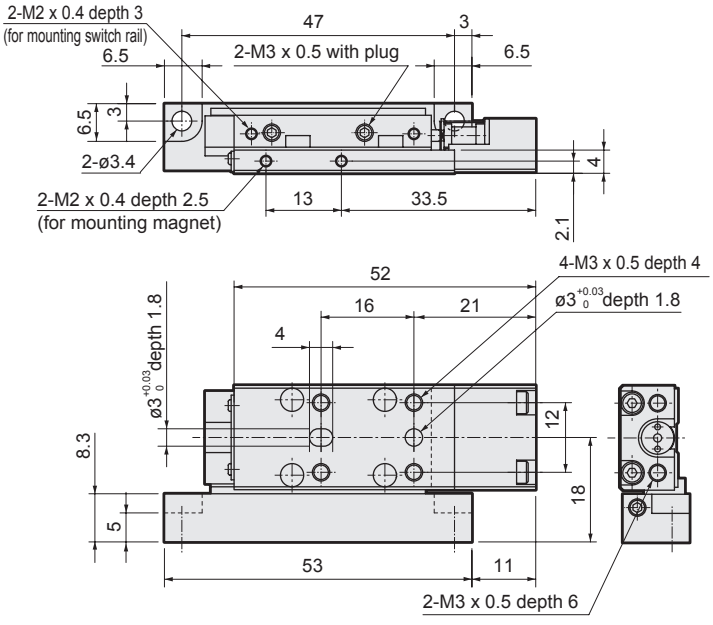


· Positioning pin (-J)

· With magnet/cylinder switch



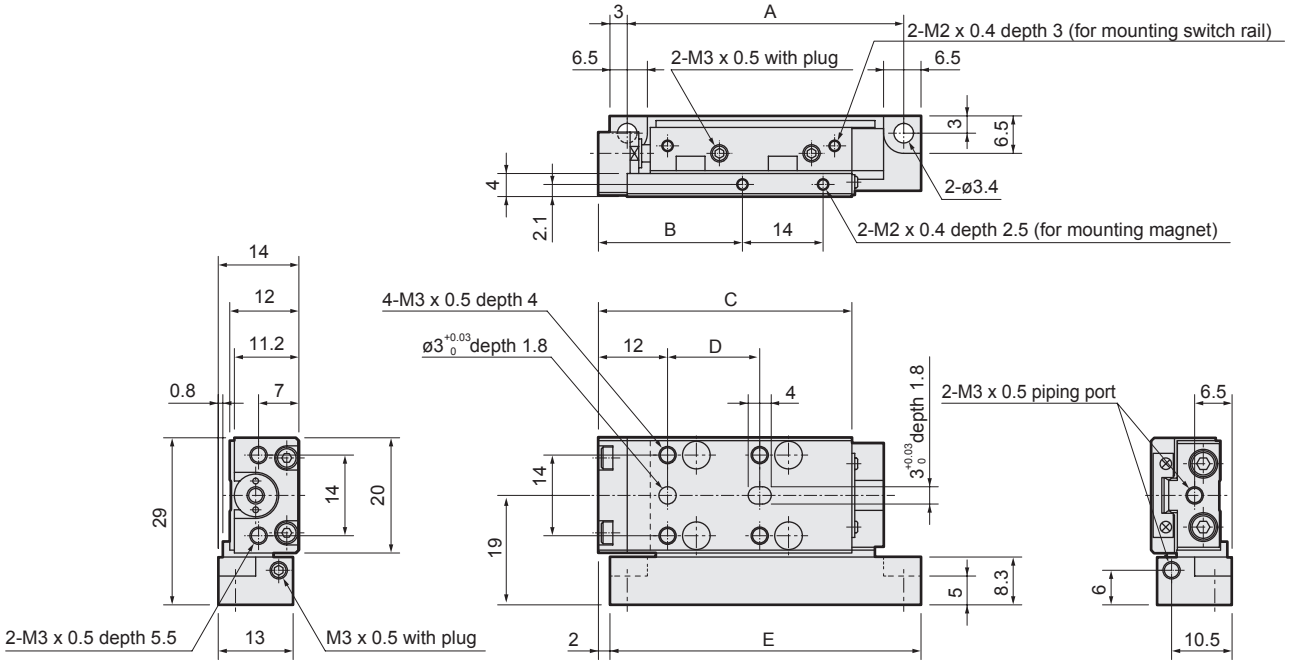
· With buffer (-B)

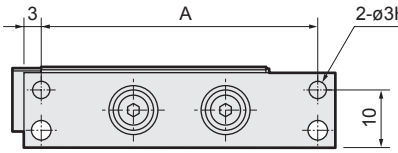


Note : Refer to page 47 for switch mounting position dimensions.

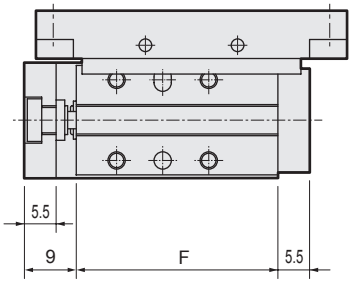
Dimensions (bore size: ø6) CAD

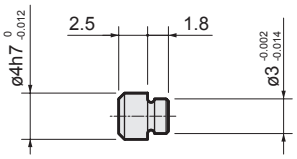
● LCM-A-6-R (piping direction: right)





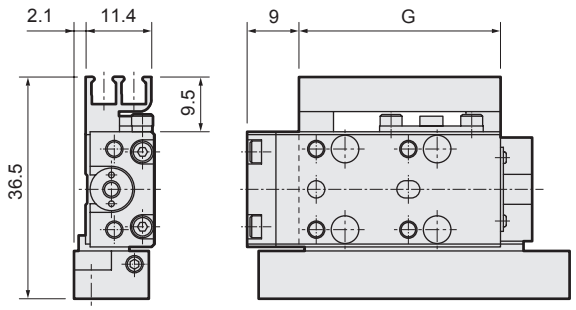
· Positioning pin (-J)



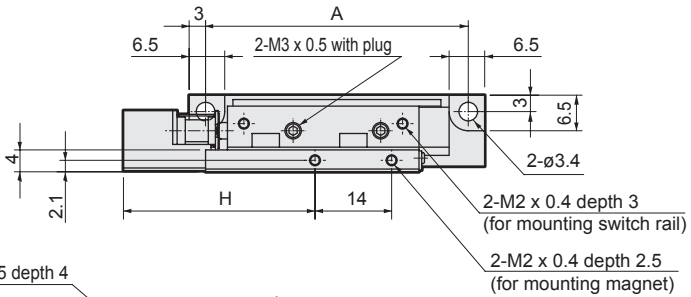


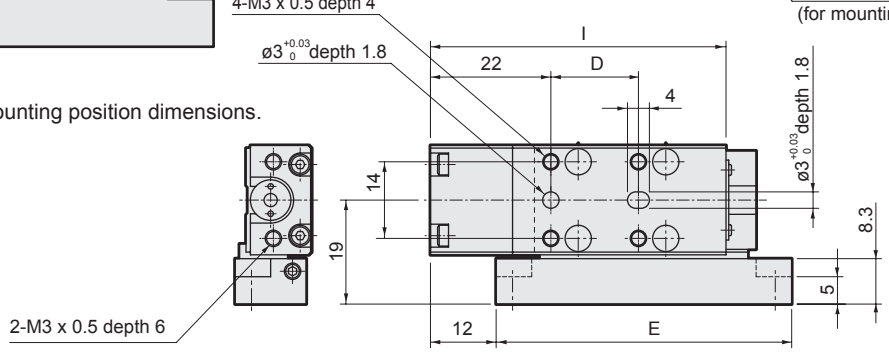
Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	54	35	35	35	54
10	48	25	44	16	54	35	35	35	54
15	53	30	49	21	59	40	40	40	59
20	58	35	54	26	64	45	45	45	64
30	68	45	64	36	74	55	55	55	74

· With magnet/cylinder switch



· With buffer (-B)

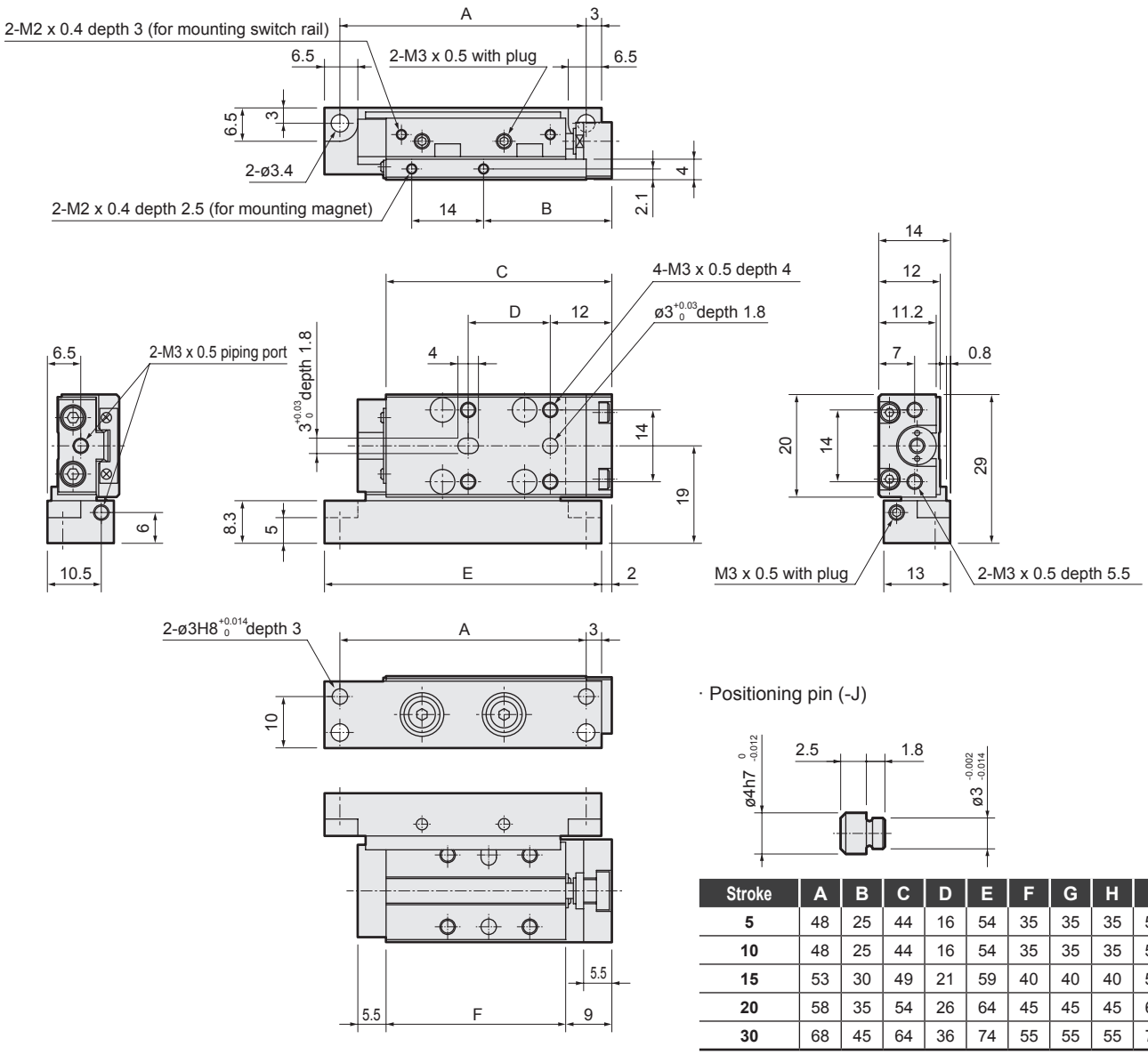




Note : Refer to page 47 for switch mounting position dimensions.

Dimensions (bore size: ø6) CAD

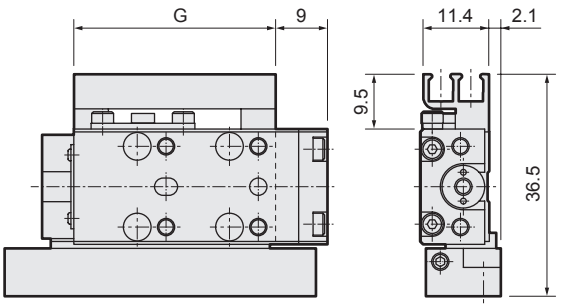
● LCM-A-6-L (piping direction: left)



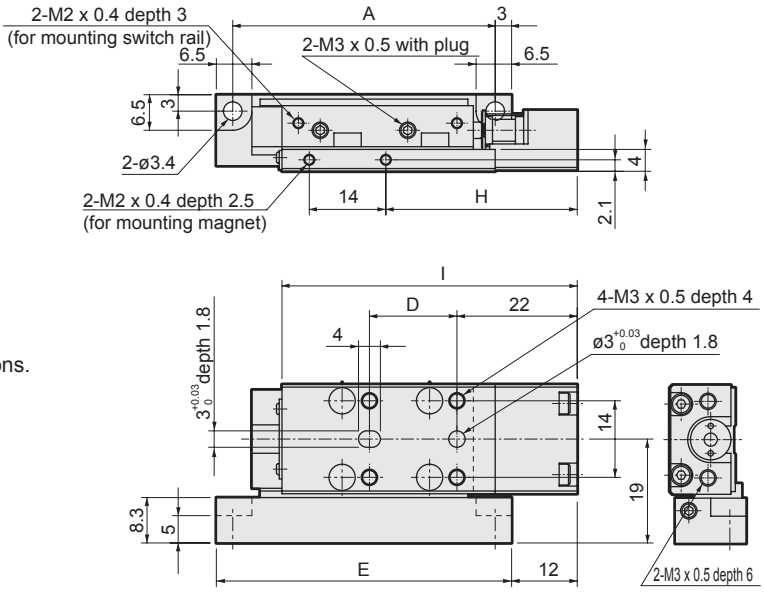
· Positioning pin (-J)

Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	54	35	35	35	54
10	48	25	44	16	54	35	35	35	54
15	53	30	49	21	59	40	40	40	59
20	58	35	54	26	64	45	45	45	64
30	68	45	64	36	74	55	55	55	74

· With magnet/cylinder switch



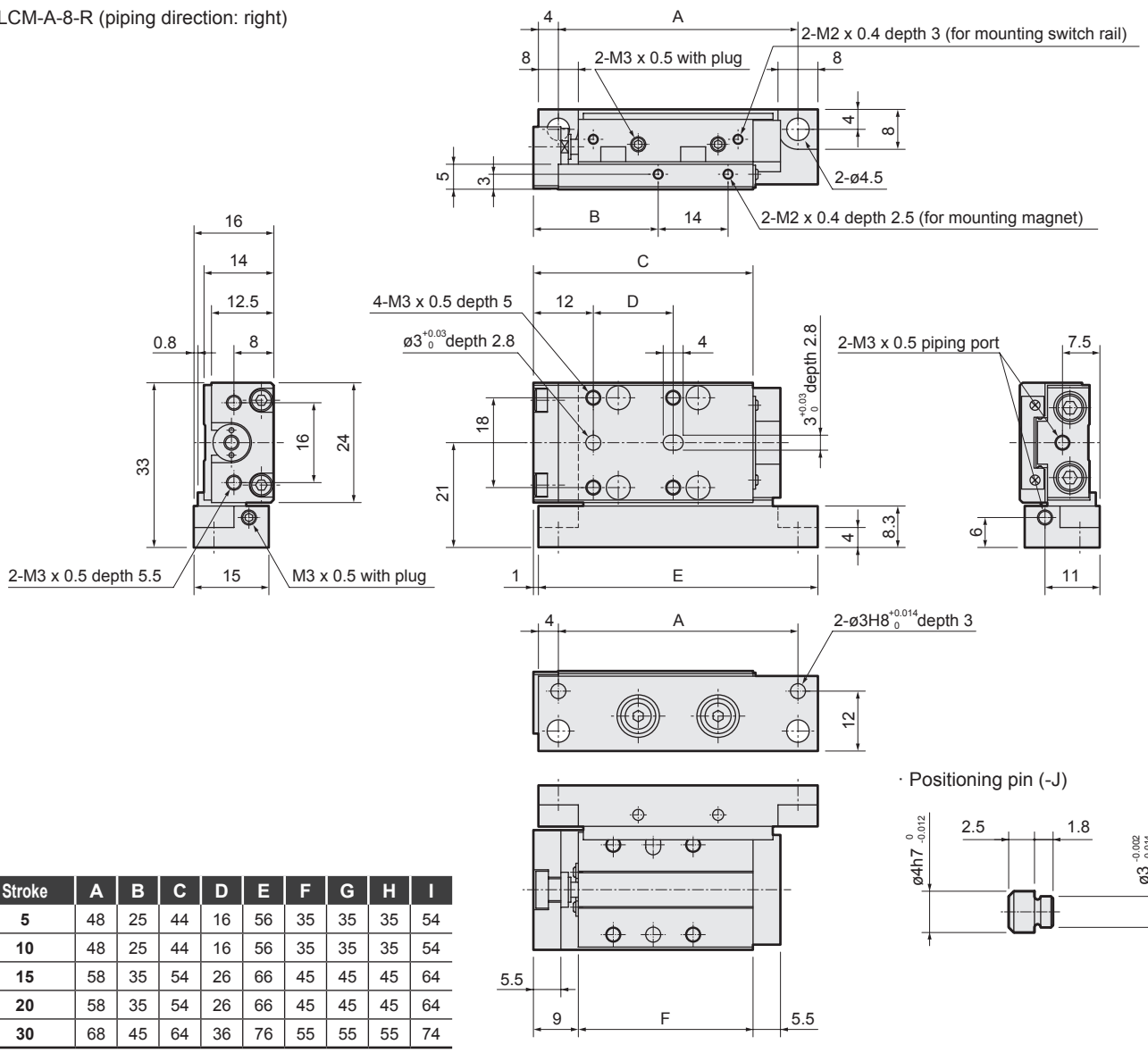
· With buffer (-B)



Note : Refer to page 47 for switch mounting position dimensions.

Dimensions (bore size: ø8) CAD

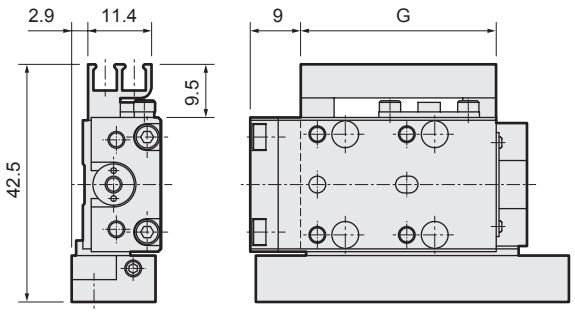
● LCM-A-8-R (piping direction: right)



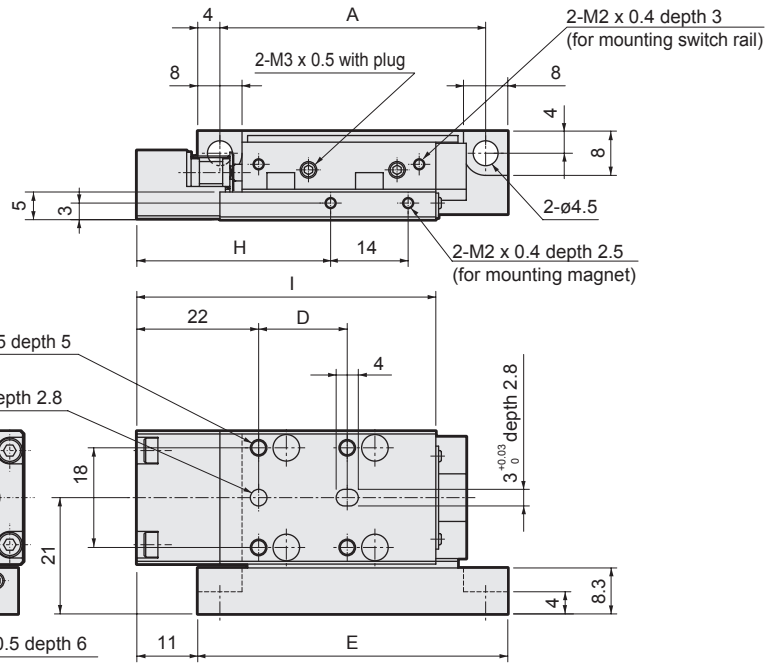
· Positioning pin (-J)

Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	56	35	35	35	54
10	48	25	44	16	56	35	35	35	54
15	58	35	54	26	66	45	45	45	64
20	58	35	54	26	66	45	45	45	64
30	68	45	64	36	76	55	55	55	74

· With magnet/cylinder switch



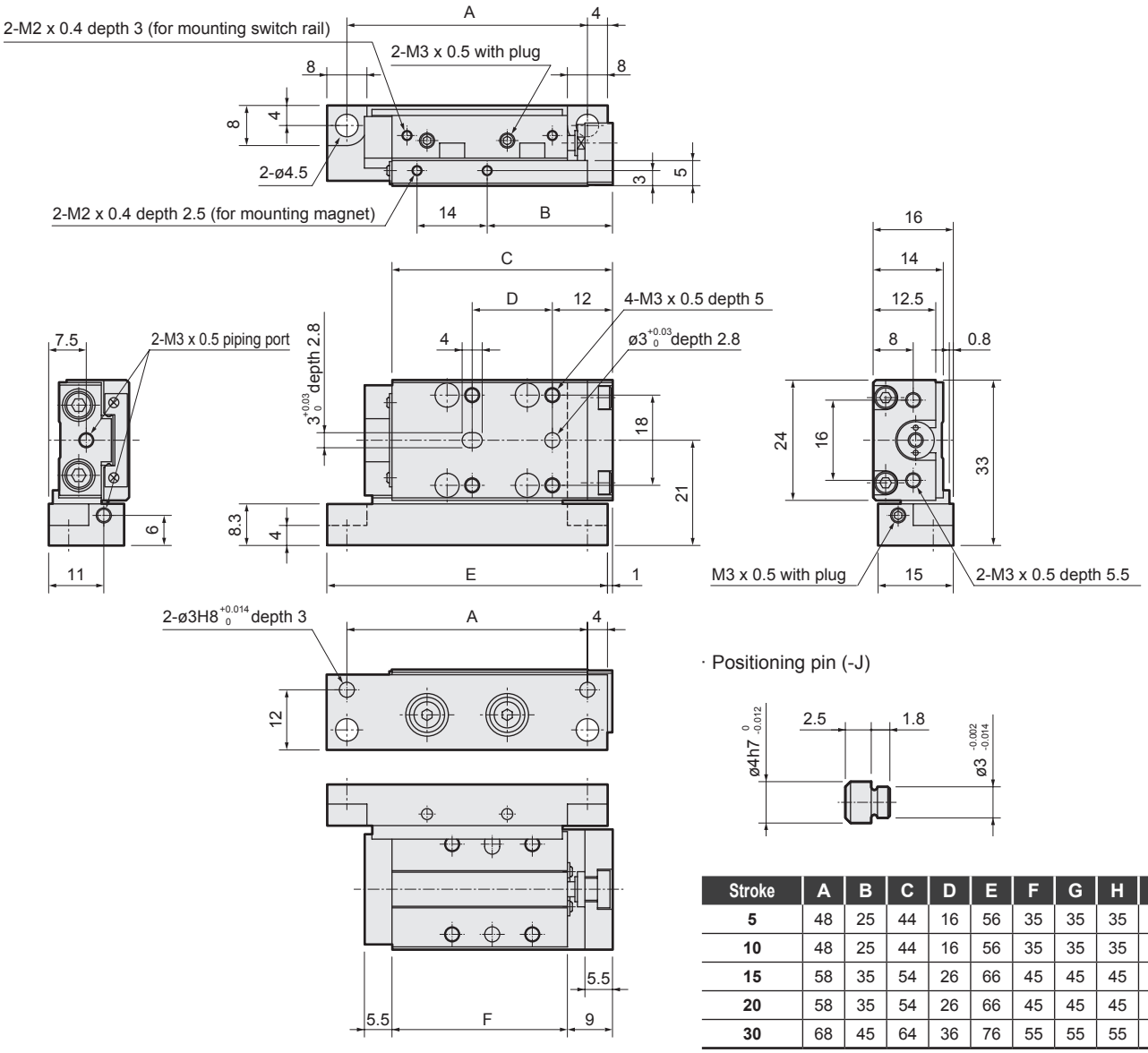
· With buffer (-B)



Note: Refer to page 47 for switch mounting position dimensions.

Dimensions (bore size: ø8) CAD

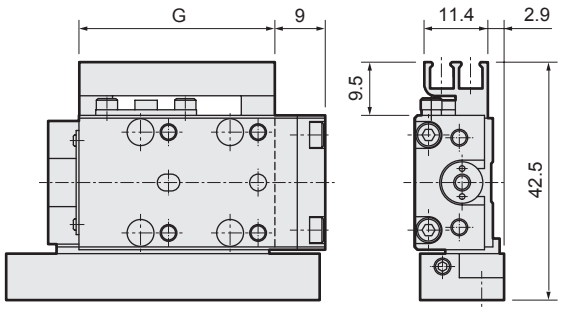
● LCM-A-8-L (piping direction: left)



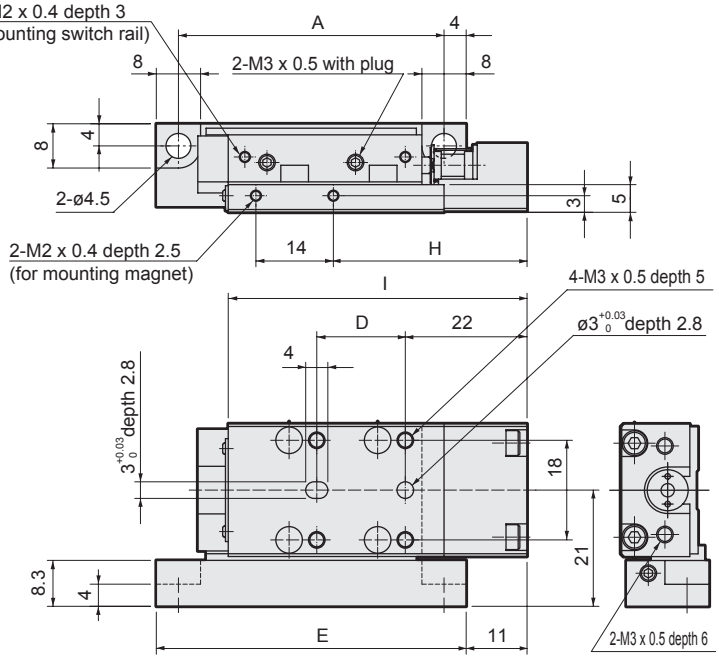
· Positioning pin (-J)

Stroke	A	B	C	D	E	F	G	H	I
5	48	25	44	16	56	35	35	35	54
10	48	25	44	16	56	35	35	35	54
15	58	35	54	26	66	45	45	45	64
20	58	35	54	26	66	45	45	45	64
30	68	45	64	36	76	55	55	55	74

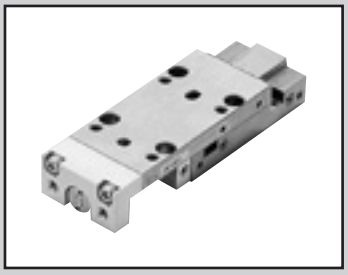
· With magnet/cylinder switch



· With buffer (-B)



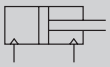
Note : Refer to page 47 for switch mounting position dimensions.



Linear slide cylinder Double acting/single rod clean-room specifications

LCM-P73 Series

● Bore size: ø4.5, ø6, ø8

JIS symbol 

Specifications

Descriptions		LCM -P73		
Bore size	mm	ø4.5	ø6	ø8
Actuation		Double acting		
Working fluid		Compressed air		
Max. working pressure	MPa	0.7		
Min. working pressure	MPa	0.2		0.15
Proof pressure	MPa	1.05		
Ambient temperature	°C	0 to 60		
Port size		M3		
Stroke tolerance	mm	+1.0 0		
Working piston speed	mm/s	30 to 300		
Cushion		No	With rubber cushion	
Lubrication		Not available		
Allowable absorbed energy	J	Refer to the table on page 50.		

Stroke

Bore size(mm)	Standard stroke(mm)	Min. stroke with switch(mm)
ø4.5	5/10	5
ø6	5/10/15/20/30	
ø8	5/10/15/20/30	

*1: Products with stroke other than standard stroke are not available.

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire	Proximity 2-wire		Proximity 3-wire		
	F2S	F3S	F2H/F2V	F2YH/F2YV	F3H/F3V	F3PH/F3PV (Made to order)	F3YH/F3YV
Applications	Dedicated for programmable controller	Programmable For controller, relay	Programmable Controller dedicated		For programmable controller, relay		
Output method	-	NPN output	-		NPN output	PNP output	NPN output
Power supply voltage	-	10 to 28 VDC	-		10 to 28 VDC	4.5 to 28 VDC	10 to 28 VDC
Load voltage	10 to 30 VDC	30 VDC or less	10 to 30 VDC	24 VDC ±10%	30 VDC or less		
Load current	5 to 20mA	50 mA or less	5 to 20mA (*3)		50 mA or less		
Indicator lamp	LED (Lit when ON)		Yellow LED (Lit when ON)	Red/green LED (Lit when ON)	Yellow LED (Lit when ON)	Yellow LED (Lit when ON)	Red/green LED (Lit when ON)
Leakage current	1 mA or less	10 μA or less	1 mA or less		10 μA or less		
Weight g	1 m: 10 3 m: 29						

*1 : Refer to Ending Page 1 for detailed switch specifications and dimensions.
*2 : Switches other than the above models, such as switches with connectors, are also available. Refer to Ending Page 1.
*3 : The max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)
*4 : The F-switch uses a bend-resistant lead wire.

Cylinder weight

Unit: g

Stroke (mm)	5		10		15		20		30		Added weight
Bore size (mm)	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	No magnet/ switch rail	With magnet + switch rail	Weight per switch
ø4.5	45	49	45	49	-	-	-	-	-	-	Refer to the weight in the switch specifications.
ø6	61	66	61	66	69	75	77	83	93	100	
ø8	87	92	87	92	108	114	108	114	129	136	

Theoretical thrust table

Unit: N

Bore size (mm)	Operating direction	Working pressure MPa					
		0.2	0.3	0.4	0.5	0.6	0.7
ø4.5	Push	3.2	4.8	6.4	8.0	9.5	11.1
	Pull	2.6	3.8	5.1	6.4	7.7	8.9
ø6	Push	5.7	8.5	11.3	14.1	17.0	19.8
	Pull	4.2	6.4	8.5	10.6	12.7	14.8
ø8	Push	10.1	15.1	20.1	25.1	30.2	35.2
	Pull	8.6	13.0	17.3	21.6	25.9	30.2

LCM-P73 Series

How to order

● Without switch (without magnet for switch)

LCM - 6 - 10 - R ——— J2 P73

● With switch (built-in magnet for switch)

LCM - 6 - 10 - R - F2H - R - J2 P73

Ⓐ Bore size
Ⓑ Stroke
Ⓒ Piping direction
Ⓓ Switch model No.
Ⓔ Switch quantity
Ⓕ Option
Ⓖ Clean-room specifications

Code	Description
Ⓐ Bore size (mm)	
4.5	ø4.5
6	ø6
8	ø8

Ⓑ Stroke (mm)

		Bore size		
		ø4.5	**ø6**	**ø8**
5	5			
10	10			
15	15	-		
20	20	-		
30	30	-		

Ⓒ Piping direction	
R	Right from rod side
L	Left from rod side

Ⓓ Switch model No.

Straight lead wire	L-shaped lead wire	Contact	Voltage AC	Voltage DC	Indicator	Lead wire
-	**F2S***	Proximity			1-color LED	2-wire
F2H*	**F2V***					
-	**F3S***					3-wire
F3H*	**F3V***					
F3PH*	**F3PV***				1 color display (PNP output) (made to order)	3-wire
F2YH*	**F2YV***				2-color LED	2-wire
F3YH*	**F3YV***					3-wire

*** Lead wire length**	
Blank	1 m (standard)
3	3 m (option)

Ⓔ Switch quantity	
R	1 on rod side
H	1 on head side
D	2

Ⓕ Option	
M *1	With magnet
F1 *1, 2	With magnet + switch rail (one switch groove)
F2 *1	With magnet + switch rail (two switch grooves)
J*	With positioning pin (*···· number of pins)

Ⓖ Clean-room specifications	
P73	Vacuum treatment

⚠ Precautions for model No. selection

*1: Can be omitted if the switch model No. is specified.
*2: Available only for ø4.5.

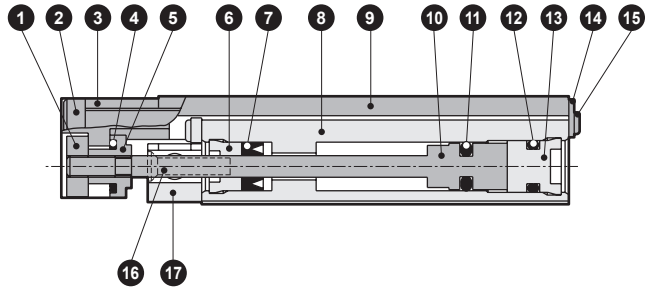
[Example of model No.]

LCM-6-10-R-F2H-R-J2P73

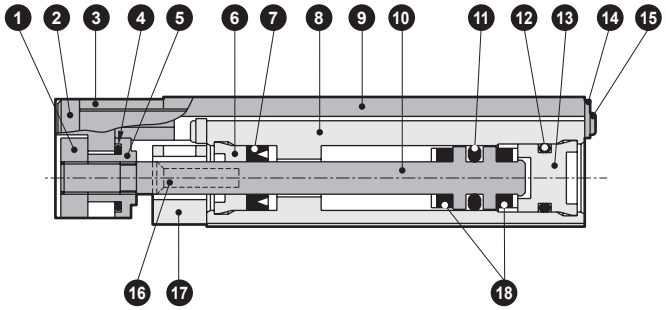
Model No.: Linear slide cylinder, double acting
Ⓐ Bore size : ø6 mm
Ⓑ Stroke : 10 mm
Ⓒ Piping direction : Right when viewed from rod side
Ⓓ Switch model No. : Proximity switch F2H, lead wire 1 m
Ⓔ Switch quantity : 1 on rod side
Ⓕ Option : With positioning pin (2)
Ⓖ Clean-room specifications : Vacuum treatment

Internal structure and parts list

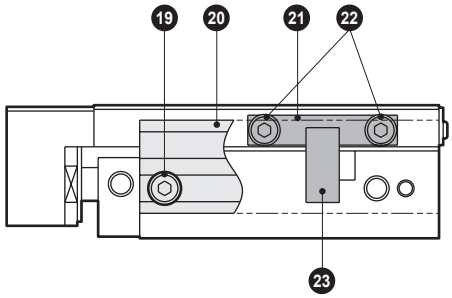
● LCM-4.5-P73



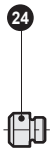
● LCM-6,8-P73



● LCM-4.5 to 8-F-P73 With magnet/switch rail



·Positioning pin



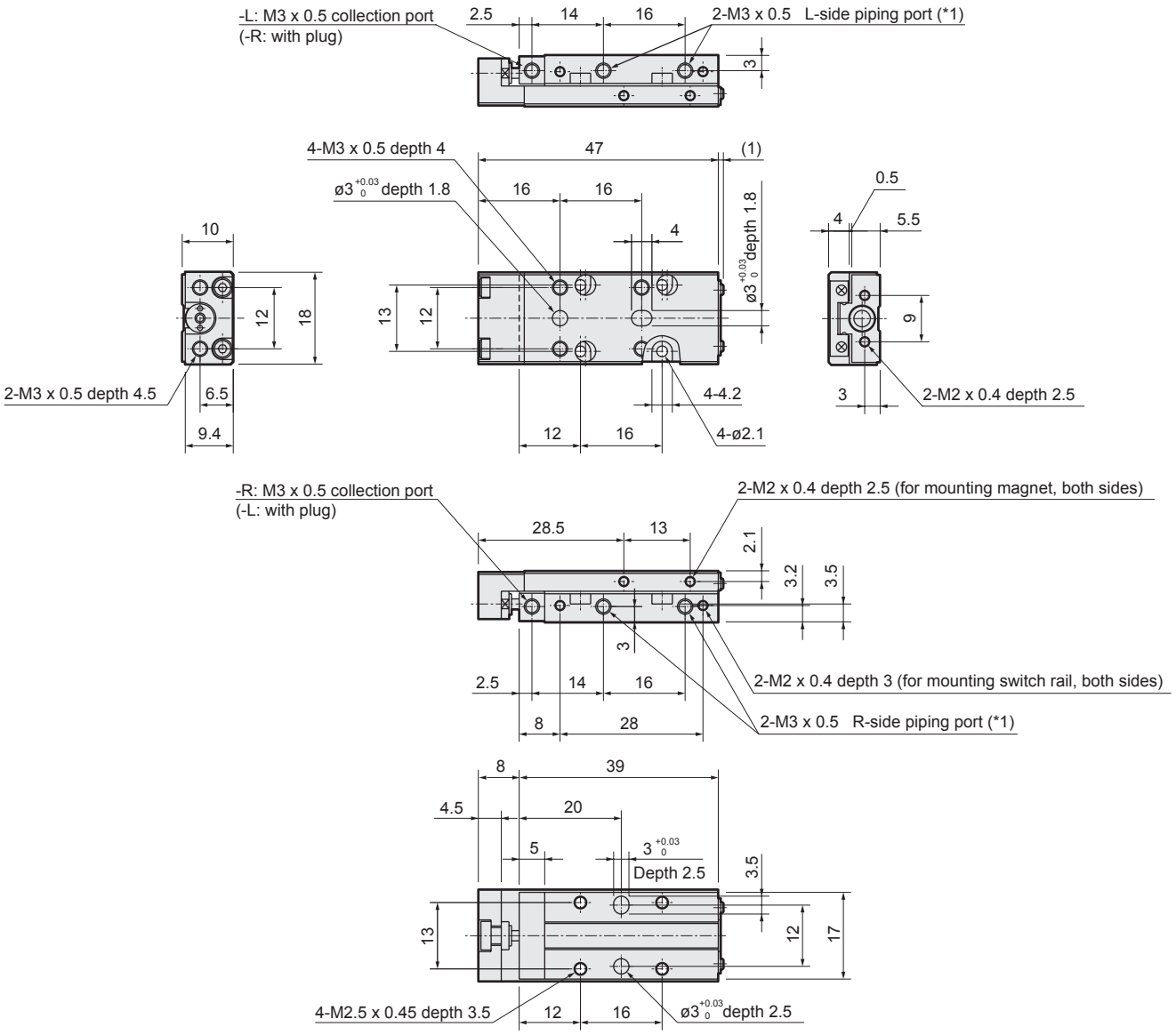
Cannot be disassembled

Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Floating bush A	Stainless steel		13	Cover	Acetal resin	
2	Hexagon socket head cap screw	Stainless steel		14	Stop plate	Stainless steel	
3	End plate	Aluminum alloy		15	Small machine screw	Stainless steel	
4	O-ring	Nitrile rubber		16	Small machine screw	Stainless steel	
5	Floating bush B	Stainless steel		17	Dust collection block	Aluminum alloy	
6	Rod cover	Acetal resin		18	Cushion rubber	Urethane rubber (ø6, ø8)	
7	Rod packing	Nitrile rubber		19	Hexagon socket head cap screw	Stainless steel	
8	Cylinder body	Stainless steel		20	Switch rail	Aluminum alloy	
9	Slide table	Stainless steel		21	Plate	Aluminum alloy	
10	Piston	Stainless steel		22	Hexagon socket head cap screw	Stainless steel	
11	Piston packing	Nitrile rubber		23	Magnet	Plastic	
12	O-ring	Nitrile rubber		24	Positioning pin	Steel	

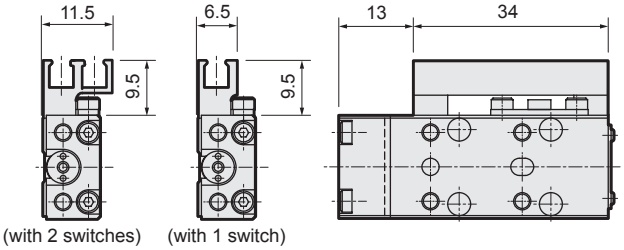
Dimensions (bore size: ø4.5) CAD

● LCM-4.5-P73

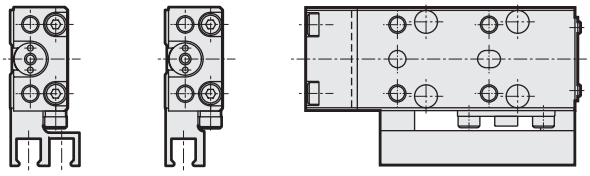


(*1) Plug is attached to the opposite side to the piping port specified with the model No.

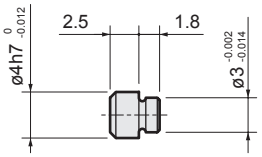
· With magnet/cylinder switch (piping direction: -R)



· With magnet/cylinder switch (piping direction: -L)



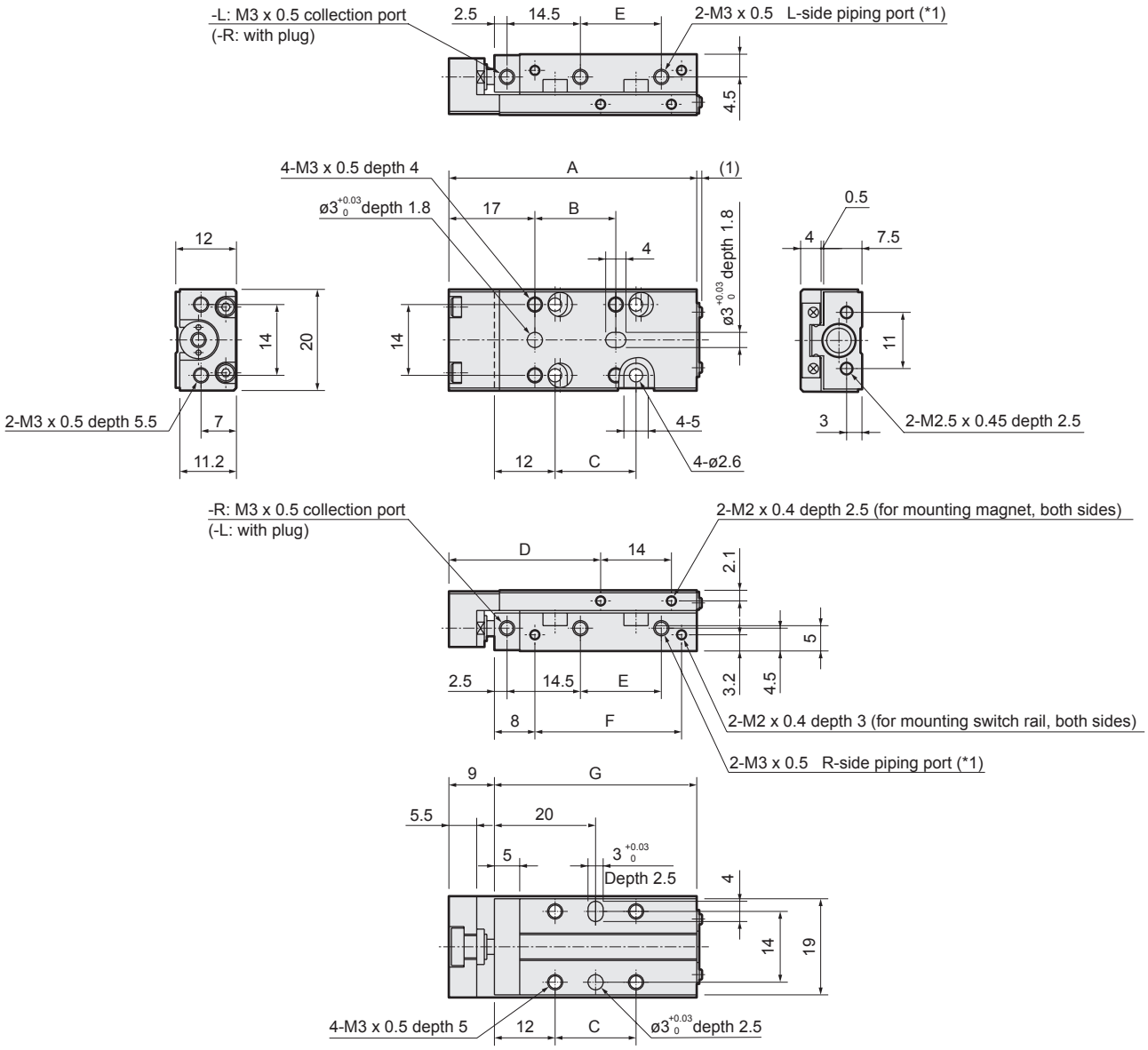
· Positioning pin (-J)



Note : Refer to page 47 for switch mounting position dimensions.

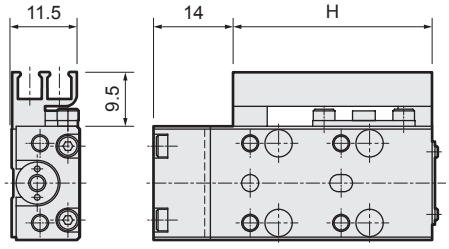
Dimensions (bore size: ø6) CAD

● LCM-6-P73

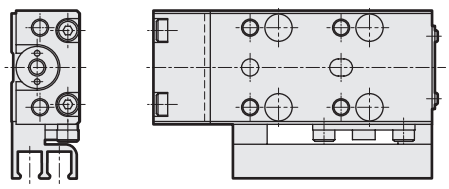


(*1) Plug is attached to the opposite side to the piping port specified with the model No.

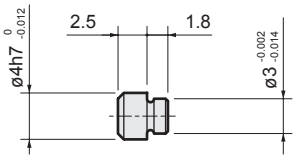
· With magnet/cylinder switch (piping direction: -R)



· With magnet/cylinder switch (piping direction: -L)



· Positioning pin (-J)

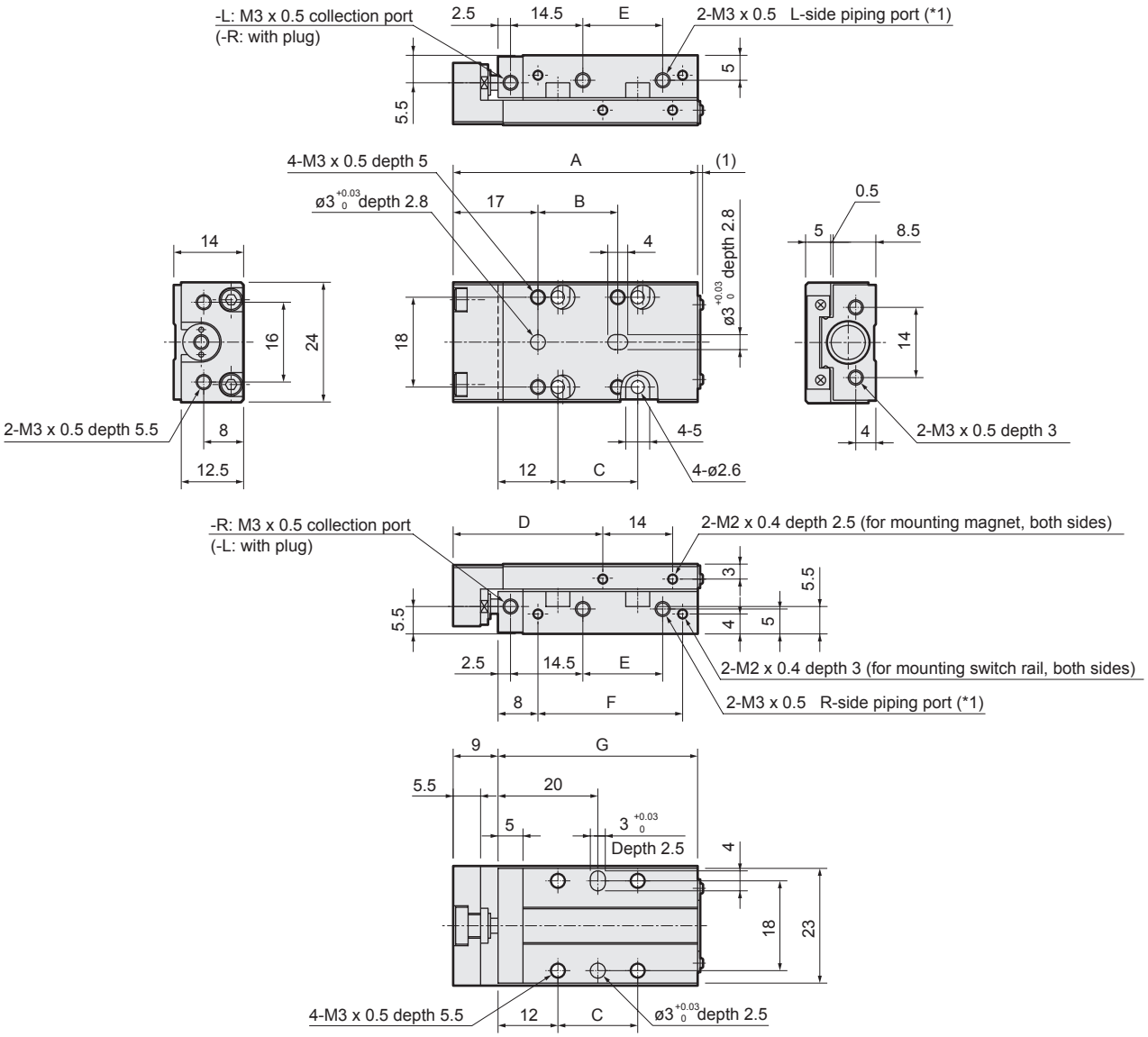


Stroke	A	B	C	D	E	F	G	H
5	49	16	16	30	16	29	40	35
10	49	16	16	30	16	29	40	35
15	54	21	21	35	21	34	45	40
20	59	26	26	40	26	39	50	45
30	69	36	36	50	36	49	60	55

Note : Refer to page 47 for switch mounting position dimensions.

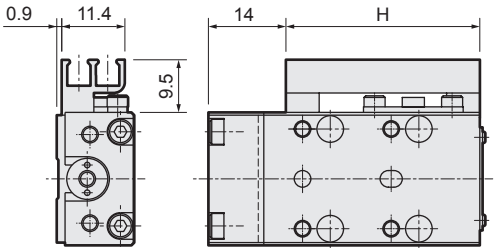
Dimensions (bore size: ø8) CAD

● LCM-8-P73

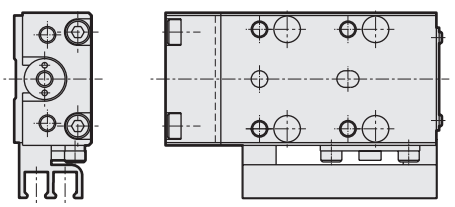


(*1) Plug is attached to the opposite side to the piping port specified with the model No.

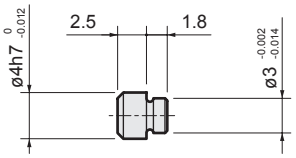
· With magnet/cylinder switch (piping direction: -R)



· With magnet/cylinder switch (piping direction: -L)



· Positioning pin (-J)



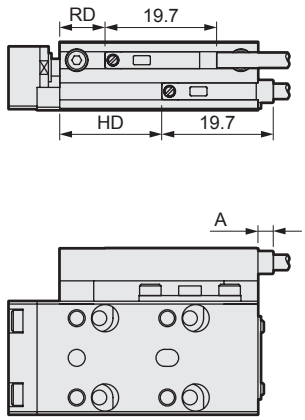
Stroke	A	B	C	D	E	F	G	H
5	49	16	16	30	16	29	40	35
10	49	16	16	30	16	29	40	35
15	59	26	26	40	26	39	50	45
20	59	26	26	40	26	39	50	45
30	69	36	36	50	36	49	60	55

Note : Refer to page 47 for switch mounting position dimensions.

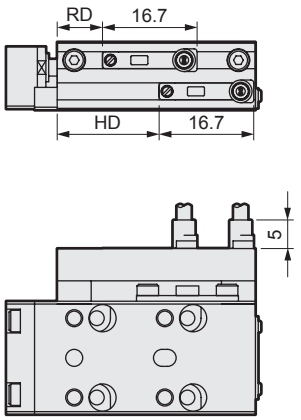
LCM Series Common protruding dimensions with switch

● Lead wire hole on the rear side

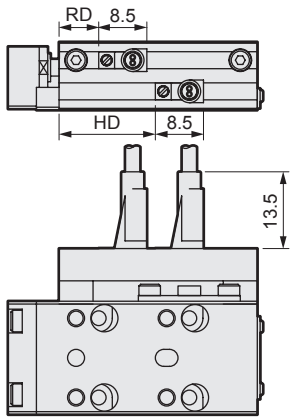
·F*H



·F*V



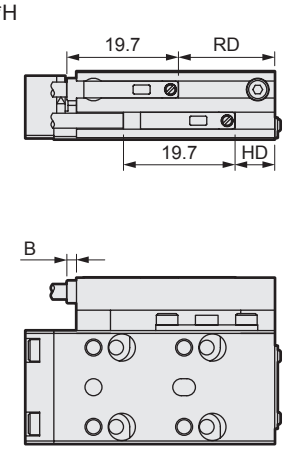
·F*S



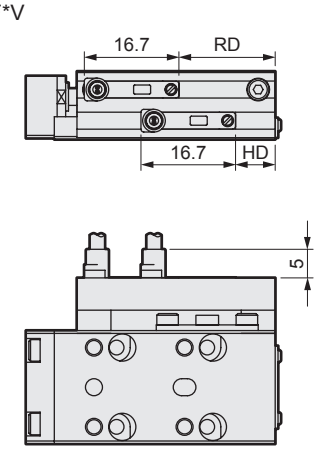
Bore size (mm)	Stroke	RD			HD			A	
		F*H	F*V	F*S	F*H	F*V	F*S	1-color LED	2-color LED
ø4.5	5	12	12	11	17	17	16	2.7	7.2
	10	7	7	6	17	17	16		
ø6	5	13	13	12	18	18	17		
	10	8	8	7	18	18	17		
	15	8	8	7	23	23	22		
	20	8	8	7	28	28	27		
	30	8	8	7	38	38	37		
ø8	5	13	13	12	18	18	17		
	10	8	8	7	18	18	17		
	15	13	13	12	28	28	27		
	20	8	8	7	28	28	27		
	30	8	8	7	38	38	37		

● Lead wire hole on the front side

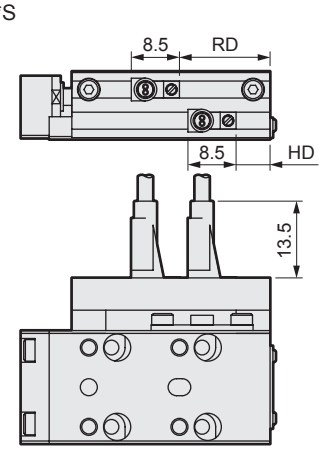
·F*H



·F*V



·F*S

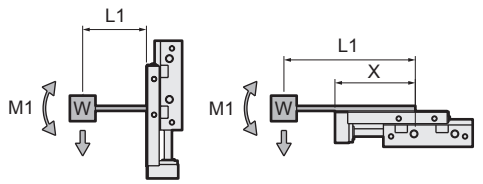
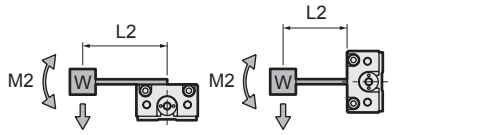
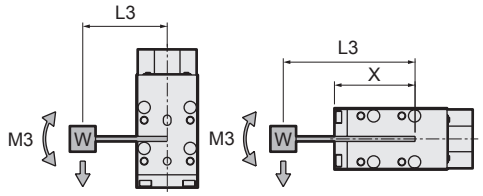


Bore size (mm)	Stroke	RD			HD			B	
		F*H	F*V	F*S	F*H	F*V	F*S	1-color LED	2-color LED
ø4.5	5	12	12	11	7	7	6	-	-
	10	17	17	16				1.7	6.2
ø6	5	12	12	11	7	7	6	-	-
	10	17	17	16				1.7	6.2
	15	22	22	21				1.7	6.2
	20	28	27	26				1.7	6.2
	30	37	37	36				1.7	6.2
ø8	5	12	12	11	7	7	6	-	-
	10	17	17	16				1.7	6.2
	15	22	22	21				-	-
	20	27	27	26				1.7	6.2
	30	37	37	36				1.7	6.2

STEP-1

Confirm that the load moment in the full stroke is within the allowable value in each direction.

· Direction of moment and length to the center of the guide (X)

Direction	Fig.	Formula
M1 moment		M1=L1xW
M2 moment		M2=L2xW
M3 moment		M3=L3xW

·Allowable moment

N·m

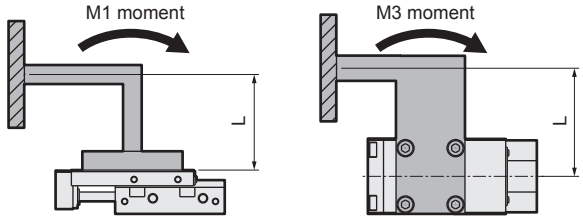
Model No.	M1	M2	M3
LCM-*-4.5	0.24	0.22	0.29
LCM-*-6	0.28	0.23	0.34
LCM-*-8	0.28	0.38	0.34

· Length to the center of the guide (X)

mm

Model No.	Stroke	X		
		Standard	With buffer	Clean specs.
LCM-*-4.5	5	30	40	35
	10			
LCM-*-6	5	31.5	41.5	36.5
	10			
	15	36.5	46.5	41.5
	20	41.5	51.5	46.5
	30	51.5	61.5	56.5
LCM-*-8	5	31.5	41.5	36.5
	10			
	15	41.5	51.5	46.5
	20			
	30	51.5	61.5	56.5

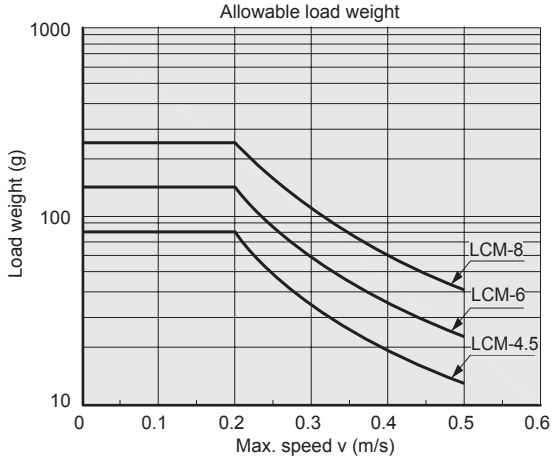
* Note that if a workpiece makes contact at a point off the guide during the stroke, the thrust will cause a large moment.



STEP-2

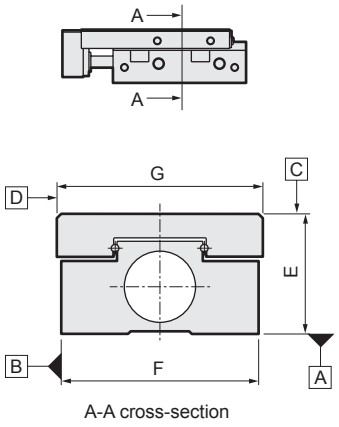
Confirm that the kinetic energy obtained from the load weight of the cylinder and the piston speed is within the allowable absorbed energy.

Bore size	ø4.5	ø6	ø8
Allowable absorbed energy J	$1.59x10^{-3}$	$2.83x10^{-3}$	$5.02x10^{-3}$



Technical data

■ Accuracy of the slide table



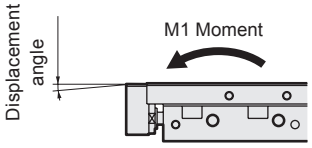
mm

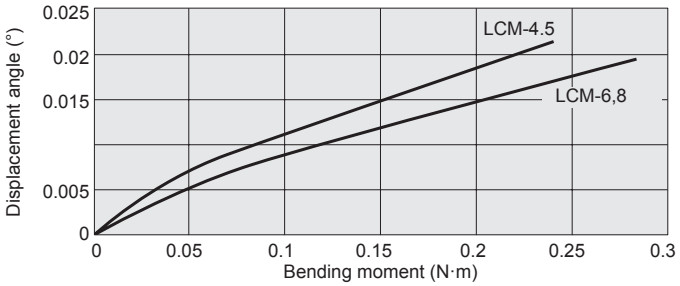
Item		LCM-*-4.5 to 8
Parallelism	C-plane against A-plane	0.03
	D-plane against B-plane	0.03
Parallelism during movement	C-plane against A-plane	0.005 Note
	D-plane against B-plane	0.005 Note
Tolerance of E		±0.05
Tolerance of F		±0.05
Tolerance of G		±0.05

Note : 0.006 in LCM-6, 8 with 30 mm stroke

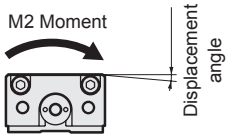
■ Displacement angle of the slide table due to bending moment (reference value)

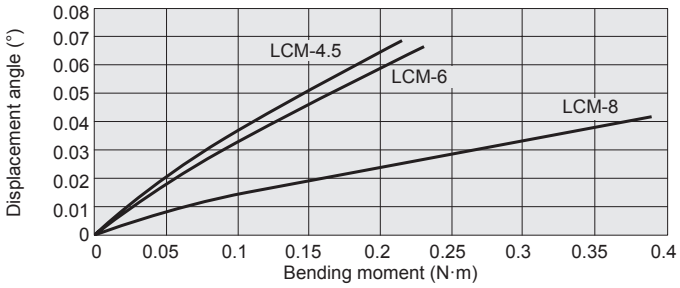
M1 Moment



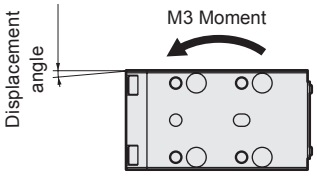


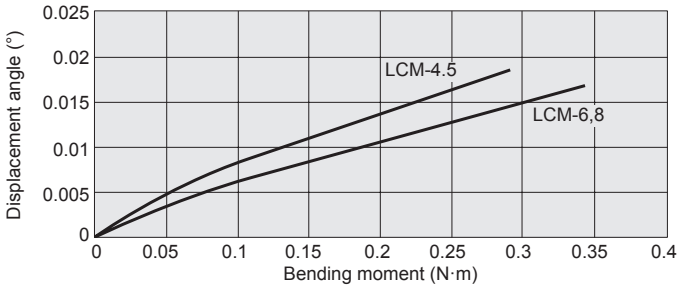
M2 Moment





M3 Moment





Pneumatic components

Safety Precautions

Be sure to read this section before use.
Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Linear slide cylinder LCM Series

Design/selection

1. Common

⚠CAUTION

■ When selecting a cylinder, follow the “LCM selection guide” on page 48.

■ Protect the cylinder with a cover to prevent damage and malfunction in a place where it is exposed to dripping water or oil, corrosive conditions or much dust.

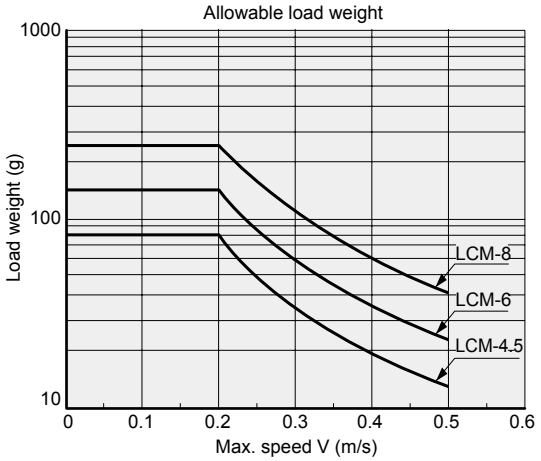
■ The stainless steel body and slide table may rust in some environments. Apply an appropriate amount of rust preventing agent periodically.

■ Switches may accidentally function near a magnetic field. A magnetic substance near the switch may also cause accidental operation. When setting a magnetic workpiece on the slide table, adjust the size so that it does not protrude toward the switch across the table end.

■ Putting a strong magnet close to the product may cause magnetization of the product, which may result in accidental operation of the switch.

■ Use the cylinder within the allowable absorbed energy in the table below. If kinetic energy exceeds these values, consider using a separate shock absorber.

Bore size	ø4.5	ø6	ø8
Allowable absorbed energy J	1.59×10^{-3}	2.83×10^{-3}	5.02×10^{-3}



Mounting, installation and adjustment

1. Common; when piping

■ Apply adhesive to the M3 plug (hexagon socket set screw) when changing the piping port position. (Low strength adhesives such as LOCTITE 222/221 or ThreeBond 1344 are recommended) Tighten the plug up to a halfway point so that the screw does not protrude from the port surface and does not reach the bottom of the port.

■ As compatible fittings are limited, refer to the table below to select a fitting.

Recommended fittings

Bore size	Recommended fittings
All bore sizes	PG-S2-M3
	PG-S2-M3-S
	PG-L2-M3
	FTS4-M3
	FTL4-M3

Note : FTL4-M3 is not available for ø4.5 clean-room specifications dust collection port.
Refer to “Fiber tube for push-in fitting No.CC-784A”.

■ Do not damage the surface flatness by denting or scratching the body mounting surface or the slide table surface. Make sure that the flatness of the mating surface for mounting is 0.02 mm or less. Poor flatness may result in lower performance of the guide, higher rolling resistance or shorter service life.

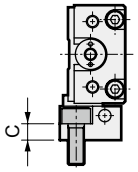
■ Use a clearance-fit stepped pin (option) for positioning. If a press-fit pin is used, the load of press fitting may damage the guide and result in failure. Also, if the pin is not stepped, it will interfere with the body since the pin hole is through, which may result in failure.

■ The slide table and end plate are supported by balls. When fixing a jig with bolts, be sure to hold the slide table and end plate while tightening. If the body is held, a large moment will be applied to the guide, resulting in low accuracy of the guide.

Mounting, installation and adjustment

■ Observe the following bolt insertion lengths and tightening torque when installing the jig on the body, slide table or end plate.

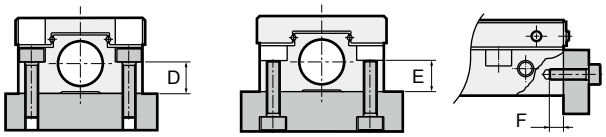
● Mounting body (side installation)



Note: Do not use a washer, etc. Otherwise the mounting bolt will contact the guide, resulting in damage.

Model No.	Bolt used	Max. tightening torque N·m	C mm
LCM-A-4.5	M3×0.5	1.14	5
LCM-A-6	M3×0.5	1.14	5
LCM-A-8	M4×0.7	2.7	4

● Mounting body

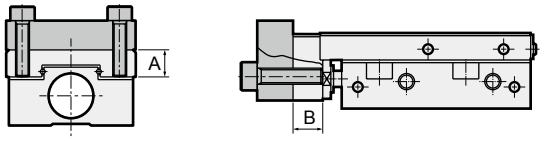


Model No.	Bolt used	Max. tightening torque N·m	D mm
LCM-*-4.5	M2×0.4	0.32	3.5
LCM-*-6	M2.5×0.45	0.65	5
LCM-*-8	M2.5×0.45	0.65	5.5

Model No.	Bolt used	Max. tightening torque N·m	E mm
LCM-*-4.5	M2.5×0.45	0.65	3.5
LCM-*-6	M3×0.5	1.14	5
LCM-*-8	M3×0.5	1.14	5.5

Model No.	Bolt used	Max. tightening torque N·m	Max. insertion depth F mm
LCM-*-4.5	M2×0.4	0.32	2.5
LCM-*-6	M2.5×0.45	0.65	2.5
LCM-*-8	M3×0.5	1.14	3

● Attaching a jig



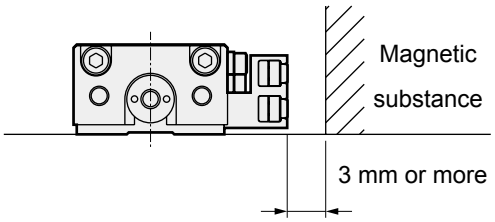
Model No.	Bolt used	Max. tightening torque N·m	Max. insertion depth A mm	Max. insertion depth B mm
LCM-*-4.5	M3×0.5	0.63	4	4.5
LCM-*-6	M3×0.5	0.63	4	5.5
LCM-*-8	M3×0.5	0.63	5	5.5

Note : Keep the length of the bolt for mounting a workpiece within the max. screw insertion depth. Otherwise it may contact and damage the body.

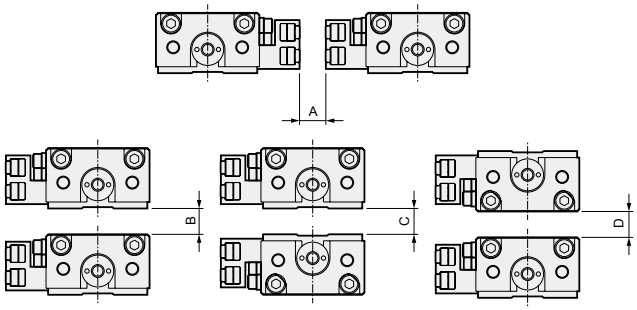
■ This series can be modified to the type with switch. Also, the switch mounting surface can be changed. Observe the following tightening torque of bolts for fixing the switch rail. Note that the port on the switch mounting surface is not used and should be plugged before the switch rail is installed.

Model No.	Bolt used	Max. tightening torque N·m
LCM-*-4.5	M2×0.4	0.17
LCM-*-6	M2×0.4	0.17
LCM-*-8	M2×0.4	0.17

■ The cylinder switch may malfunction if there is a magnetic substance such as a metal plate installed adjacently. Confirm that a distance of at least 3 mm is allocated from the surface of the switch rails. (Same for all bore sizes)



■ The cylinder switches may accidentally function if the cylinders are close to each other. Keep A, B, C and D 3 mm and over. (Same for all bore sizes)

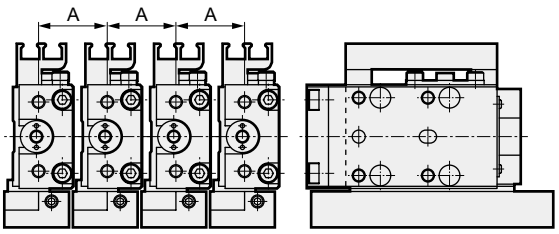


Mounting, installation and adjustment

2. Side mounting

⚠ CAUTION

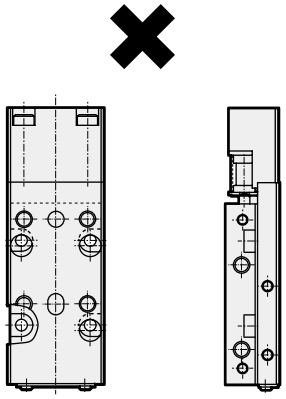
■ Keep the installation intervals within the value in the table below when installing the side mounting cylinders side by side.



Model No.	A mm
LCM-A-4.5	12
LCM-A-6	14
LCM-A-8	16

3. With buffer

■ The type with buffer cannot be used vertically upward.



Use/maintenance

⚠ CAUTION

■ Apply CGL grease (IKO) to the guide rail after six months or when the number of operation cycles reaches three million, whichever comes first.

■ This cylinder is a non-disassembly. Do not disassemble forcibly.